

### How Does Antibacterial Fabric Work?

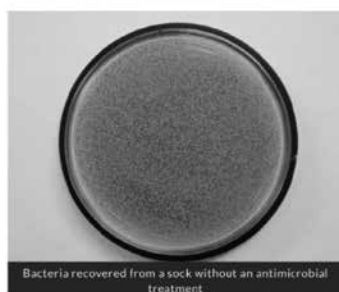
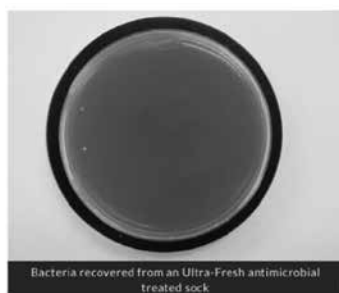
The photos and graph below are taken from our blog titled “Antimicrobial Socks: What They Are and Why You Need Them”.

Two sock fabric samples, one treated with Ultra-Fresh antimicrobial and another without an antimicrobial treatment, were tested using the ISO 20743.

The same amounts of bacteria (*Staphylococcus aureus*) were added to each sample and then incubated at 37C/98F (body temperature) for 24 hours.

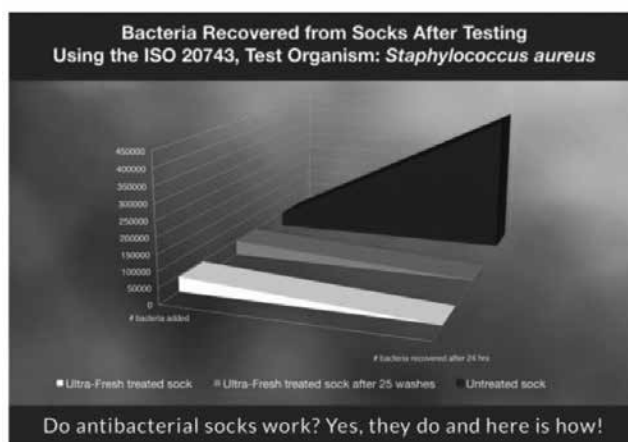
Afterwards, both samples were assessed to determine how many bacteria were remaining.

As seen in the below photos, heavy amounts of bacteria were recovered from the untreated sock fabric. In contrast, hardly any bacteria were recovered from the antimicrobial sock fabric.



The graph below demonstrates how antibacterial fabric, used to make socks, performs over time and after washing. The same number of bacteria were added to an antimicrobial sock, the same sock after 25 home launderings, and also an untreated sock.

The samples were incubated for 24 hours at 98F/37C (body temperature). Afterwards, the number of bacteria remaining were determined.



### Antimicrobial socks: how they work

Do antibacterial socks work? Yes, they do and here is how! The bacteria on the untreated sock fabric grew exponentially (from about 50,000 to over 400,000!).

However, the Ultra-Fresh treated antimicrobial socks, had 99.9% fewer bacteria as compared to the untreated sock after the same time period – even after 25 washes!

Therefore, the conclusion is very simple: fewer bacteria = less unwanted, embarrassing odor.

### • Where is an Antimicrobial Fabric Used?

Antimicrobial fabrics are used across a wide range of end-use applications. We have listed a few examples below.

Housewares: towels, bedding, upholstery, carpets, curtains, pillows

Commercial: window coverings, military fabrics, uniforms, tenting, carpets.

Apparel: caps, jackets, work wear, sportswear, fleeces, intimates

Building Products: architectural fabrics, awnings, canopies

Healthcare: scrubs, masks, drapery, window coverings, bedding, filters, lab coats



Dr. F Nayeb Morad



# Antimicrobial fabric

Antimicrobial fabric treatments can be applied during normal textile finishing processes, meaning no special equipment or processing steps are required.

When applying by coating, padding, exhaustion or foaming, the antimicrobial additive can typically be used in combination with other common auxiliaries such as softeners, moisture management systems, fluorocarbons or resins.

Antimicrobial treatment for fabric can be used in textile coatings by adding directly to the liquid prior to application.

Certain antimicrobial additives for fabrics can also be included during the extrusion process of synthetic fibers such as polyester, polyamide or polypropylene.

Ultra-Fresh and Silpure antimicrobial additives are applicable to a wide range of substrates, including cotton, viscose, polyester, nylon, acrylic, polyolefin, rayon, wool and their blends.

By offering a broad selection of actives and formulations, you can be confident we will always have the right product for you, regardless of your end use.

Our range of antifungal and antibacterial additives for fabrics ensure premium protection and performance.

• **Active Ingredients Used for Antimicrobial Fabric Treatment**  
Antimicrobial additives for textiles are selected based on the fiber type, processing conditions and what type of protection is needed such as antibacterial and/or antifungal activity. Other requirements, such as wash durability and individual country regulations must also be considered.

## • **Antibacterial Fabric:**

The most common antibacterial additives used to treat fabric for end uses such as apparel and home textiles are zinc pyrithione, silver, silane quaternary ammonia compounds (more commonly known as silane quats) and polyhexamethylene biguanide (PHMB).

These additives have strong antibacterial activity at low concentrations and most also have excellent wash durability.

High concentrations are typically required if antifungal properties are also required.

## • **Antifungal Fabric:**

Fabrics destined for industrial or outdoor end-uses often require antimicrobial treatment for mold. Isothiazolinone and thiabendazole, have robust antifungal profiles but are not as effective against bacterial attack.

## • **Antimicrobial Fabric:**

Need a fabric that has strong antibacterial and antifungal properties?

All technologies have their pros and cons regarding their degree of antimicrobial effectiveness, along with where and how they can be incorporated during the manufacturing process. No single active ingredient or product formulation will work across all situations.

Synergistic combinations of different actives can lower overall anti-microbial use levels, provide economical savings and most importantly, deliver superior antimicrobial performance. Therefore, it is important to work with an experienced antimicrobial supplier who has a variety of options and formulations.

## **Difference Between Antimicrobial Fabric versus Untreated Fabric**

The photos below are an example of the benefits of antimicrobial fabrics. Under the right conditions, mold and mildew can flourish by using the fabric as a food source. Anti microbial fabrics provide antibacterial and antifungal protection, keeping textiles clean and safe from attack.

Both fabric samples were tested using the AATCC Method 30, Part III using *Aspergillus niger* as specified by the method. The untreated sample supported heavy amounts of the black mold after seven days of incubation. The anti-microbial fabric is free of fungal growth, maintaining esthetic appeal and tensile strength.