

Case Study #2

PAD IT. EXHAUST IT. SPRAY IT.

SILVADUR™ Antimicrobial Means Easy Application. First Time. Every Time.

Only SILVADUR™ offers unmatched intelligent freshness

Operating & Processing Efficiencies:

- + No excess curing conditions required
- + Compatible with most textile auxiliary chemistries
- + Lower application levels required vs. competing products

SILVADUR™ Application Using Exhaustion Method

SILVADUR™ Antimicrobial is a liquid formulation that can be easily applied to nylon socks, cotton towels and other textile or apparel products that require individual finishing and are made from manmade or synthetic yarns. It is applied to these products using the exhaustion method—one of two widely used processes for applying antimicrobials.

Simply defined, exhaustion involves placing the fabric or yarn to be treated in a chamber containing water and an antimicrobial product. The chamber is then sealed and the treatment solution heated, which results in the antimicrobial product transitioning from the water to the fabric or yarn.

SILVADUR has an exhaustion efficiency of greater than 90 percent because it contains silver ions and an organic polymer that readily adheres to fabrics and yarns. This gives it a distinct performance advantage. Other silver-based antimicrobials cannot be exhausted, or they have very low exhaustion efficiencies, because they contain silver particles and inorganic materials that do not readily adhere to fabrics or yarns.

SILVADUR has been extensively tested globally to validate its efficacy on cotton towels and nylon socks when applied using the exhaustion process. These evaluations show the following results:

Exhausting SILVADUR on a 100 percent cotton towel at 50 ppm on weight of fabric offers a greater than 99 percent reduction of *K. pneumonia*. It also offers a greater than 99 percent reduction of *S. aureus*. These results were obtained after the towels had been subjected to 50 washing cycles. Test method: FZ/T 62015-2009 *Antibacterial Towel*.

Exhaustion On Cotton Towel

Application	Silver	Antimicrobial Efficacy	Test Results
Cotton Towel	50ppm (o.w.f.)	FZ/T 62015-2009 50 washing cycles AATCC 135	<i>K. pneumoniae</i> , ATCC 4392, >99% reduction <i>S. aureus</i> ATCC 6538, >99% reduction



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Exhausting SILVADUR on nylon socks at 60 ppm on weight of fabric offers a greater than 99 percent reduction of *E.coli*, greater than 99 percent reduction of *S. aureus* and greater than 99 percent reduction of *C. albicans*. Test method: FZ/T 73023-2006 *Antibacterial Knitwear*.

Exhaustion On Socks

<i>Application</i>	<i>Silver</i>	<i>Antimicrobial Efficacy</i>	<i>Test Organisms</i>
Nylon Socks	60ppm (o.w.f.)	FZ/T 73023-2006 20 washing cycles AATCC 135	<i>E.coli</i> , ATCC 8099, >99% reduction
			<i>S. aureus</i> ATCC 6538, >99% reduction
			<i>C. albicans</i> , ATCC 10231, >99% reduction
Poly / Cotton Socks	10 ppm (o.w.f.)	ISO 20743-2007 30 Wash cycles AATCC 61 2A	<i>K. pneumoniae</i> ATCC 4352, >3.7% log reduction
			<i>S. aureus</i> ATCC 6538, >3.3% log reduction

SILVADUR's patented polymer-containing, silver technology delivers silver ions to fabric surfaces and activates them only in the presence of undesirable bacteria.

SILVADUR's Operating and Processing Performance Edge

The results of these national and international third-party tests clearly underscore SILVADUR's exceptional and durable antimicrobial activity, ease of processing and performance advantages over other products on the market today.

There are several reasons for SILVADUR's competitive edge:

- + It is the only silver-based antimicrobial product that is a liquid, so its silver ions adhere to fabrics much better and coverage is more uniform than products containing solid silver particles. This gives manufacturers exceptional flexibility in making antimicrobial textile and apparel products with yarns.
- + It is the only microbial control product on the market with an organic polymer delivery system for silver. As a result, SILVADUR adheres better to organic substrates, such as cotton towels and nylon socks, than inorganic antimicrobials.
- + It is easy to use because it can be processed using multiple methods, including exhaustion and padding applications.
- + Because of its high exhaustion efficiency, there is little to no silver left in the treatment solution, which reduces the cost to treat. In addition, the treatment solution containing SILVADUR can be recycled and reused, which positively impacts the environment.

www.silvadur.com | www.dowmicrobialcontrol.com

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