



SILVADUR™ 900 Antimicrobial

EPA Reg. No. 707-313

General

SILVADUR™ 900 Antimicrobial is a polymer-based antimicrobial that uses a patented delivery system to transport and secure the silver ions to a treated article. This novel system controls the release of the silver to avoid discoloration and early exhaustion typical of other silver products. When incorporated into industrial and household materials during the manufacturing process, SILVADUR 900 inhibits the growth of microbes to offer protection, durability and freshness.

It is supplied as a liquid, making it easy to dispense and mix, and is compatible with a wide range of chemicals, including latex resins (like PVA, SBR, EVA) and finishing agents (such as anti-wrinkle resins, fluorocarbons and softeners).

Physical Properties

The following are typical properties of SILVADUR™ 900 Antimicrobial; **they are not to be considered product specifications.**

Appearance, visual:	Pale amber liquid
pH:	10.5 - 11.1
Viscosity ¹ :	150 mPa.s at 25°C (77°F)
Silver concentration via titration, wt. %:	2.6 – 3.1
Flash point, °C, Closed Cup:	+16

¹Viscometer Brookfield Model DV-II + LV spindle 1 , speed 30 rpm

Special Features and Benefits

- Smart control: controlled release of silver for improved durability
- Improved durability: longer-term efficacy and improved cost-to-treat
- Novel liquid formulation: a clear and non-tacky solution that is easy to dilute, dose, formulate and apply
- Broad spectrum activity: controls various odor-causing microorganisms
- Color stability: improved product quality and appearance vs. other silver products
- Thermal stability: high tolerance in manufacturing
- Easy to coat natural and synthetic fibers
- Compatible with a broad range of woven and non-woven additives, including fluorocarbon chemicals, softeners, antiwrinkle resins, etc.
- Maintains aesthetics of the fabric
- Can be applied by both pad and exhaustion process

Antimicrobial Activity

SILVADUR™ 900 Antimicrobial has been tested for efficacy against a variety of microorganisms. Claims of efficacy against specific organisms may not be approved in all regulatory jurisdictions. It is the responsibility of the user to confirm all applicable approvals are in place prior to product use.

SILVADUR 900 is effective at controlling and eradicating a number of microorganisms, including, but not limited to:

Bacteria	Yeasts/Molds
<i>Escherichia coli</i>	<i>Aspergillus niger</i>
<i>Klebsiella pneumoniae</i>	<i>Trycophyton mentagrophytes</i>
<i>Pseudomonas aeruginosa</i>	<i>Chaetomium globosum</i>
<i>Staphylococcus aureus</i>	<i>Candida albicans</i>
<i>Corneycbacterium ammoniagenes</i>	
<i>Listeria monocytogenes</i>	

Efficacy of 0.1% SILVADUR™ 900 Antimicrobial on Standard Textiles

Textile	ISO 20743* Log Reduction CFU	
	Untreated	Treated (0.1%)
100% Cotton	+2.0	>3.0
100% Nylon	+1.2	>3.0
100% Polyester	+1.5	>3.0
50/50 PES/Cotton	+1.4	>3.0

**Escherichia coli* with 1:500 nutrient broth in Inoculum

Efficacy on Polyester Cotton Blend (60/40) washed 50 times

SILVADUR™ 900 Antimicrobial (%)	AATCC Method 100 Percent Reduction CFU/mL		Performance
	<i>Staphylococcus aureus</i>	<i>Klebsiella pneumoniae</i>	
0	0	0	Microbial growth
0.2*	>99.9%	>99.9%	Excellent Control

*at 3% silver content in SILVADUR 900

Color Contribution 100% White Cotton

SILVADUR™ 900			
Antimicrobial (%)	Exposure Cycle ¹	UV Stability Measured as Lab Hunter Values	Performance
0	0	92.50, +1.46, -4.63	The “control” fabric in white develops slight yellowness, when exposed to UV, even without any treatment
	1	92.98, +0.95, -2.48	
	2	92.77, +0.77, -2.31	
	3	92.81, +0.78, -1.48	
0.33	0	92.36, +1.42, -4.24	SILVADUR 900 treated fabric has no perceptible color shift and no black or red color characteristics of other silver systems
	1	92.41, +1.05, -2.01	
	2	91.09, +1.23, -1.02	
	3	90.44, +1.41, -0.20	
1.0	0	92.39, +1.40, -4.46	
	1	92.56, +1.16, -1.77	
	2	91.11, +1.40, -0.50	
	3	90.48, +1.75, +0.21	

¹Cycle = 4 hr light @ 55°C + 2 hr condensation @ 45°C using QUV equipped with UVA 340 bulbs at 1W/m²/nm

Applications/ Directions for Use

SILVADUR™ 900 Antimicrobial may be applied to both organic and inorganic surfaces using standard coating methods such as saturation, spray, foam, printing or exhaust. Approved applications for SILVADUR 900 are the preservation of non-food contact coatings and films, and industrial and household woven and nonwoven fibers. From mattresses and linens, to sports apparel and footwear, to fabrics used in hygienic environments, SILVADUR 900 is an ideal solution. For exact treatment parameters specific for performance claims, please contact Dow Microbial Control for technical support.

For use in fibers: non-food contact uses in industrial and household woven and non-woven fibers such as bedding, apparel, footwear, wall and floor coverings, carpets, draperies, wiping cloths, brushes, filters, insulation, tents, awnings and tarps. Use SILVADUR 900 in the treatment bath to provide 5 to 5000 ppm silver on the fiber. The pH of treatment baths should not be lower than 5.5.

Use SILVADUR 900 in a well ventilated area, free of sparks and open flames. Standard city water may be used, provided it is free of high concentrations of metal ions and chloride. For full application instructions, contact Dow personnel prior to use to facilitate proper and efficient application of the SILVADUR 900 product.

Storage, Handling and Disposal

Please refer to the Safety Data Sheet (SDS) for this product for precise instructions. The processing and use of industrial chemicals requires adequate technical and professional knowledge. In general, avoid eye and skin contact, and wear correct personal protective equipment. Avoid prolonged inhalation of SILVADUR™ 900 Antimicrobial vapors.

Store and use SILVADUR 900 in a well ventilated area. It should be stored at ambient conditions in the original container, tightly sealed. Protect from frost and heat.

Product Stewardship

When considering the use of any Dow product in a particular application, review the latest Safety Data Sheet (SDS) and country-specific product label to ensure the intended use is within the scope of approved uses. Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products – from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including Safety Data Sheets (SDS), should be consulted prior to use of Dow products. Current Safety Data Sheets are available from Dow.

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