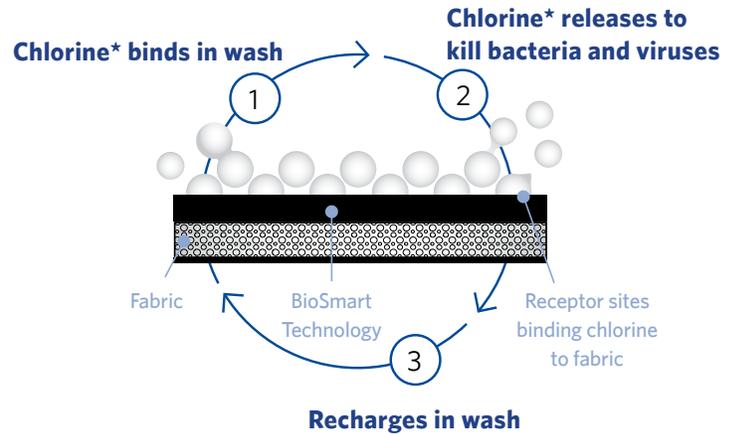


Harnessing the Antimicrobial Power of EPA-Registered Chlorine Bleach

Milliken™ BioSmart™ technology makes it simple and practical to integrate protection into common medical garments and products. The patented, bleach-activated technology harnesses the proven power of an EPA-registered chlorine bleach, turning otherwise passive textiles into an added layer of active defense against microbial exposure and contamination.

How BioSmart™ Works

1. Prior to each use, BioSmart must be laundered as directed with an EPA-registered chlorine bleach.*
2. BioSmart technology binds chlorine bleach* from the wash to the surface of the fabric.
3. Chlorine bleach* inhibits the growth and spread of bacteria.
4. BioSmart technology has been proven to be durable up to 75 industrial or home launderings.



Proven Effectiveness

When laundered as directed with an EPA-registered chlorine bleach*, BioSmart™ technology binds chlorine to the surface of the fabric, which then kills 99.9%** of many common bacteria and viruses.



* When laundered according to the EPA-registered chlorine bleach label instructions

** Laboratory conditions using AATCC 100 test method

Frequently Asked Questions

Do fabrics with BioSmart™ technology need to be charged in order to work?

Yes, fabrics with BioSmart™ technology are supplied “uncharged” and must be laundered with an EPA-registered chlorine bleach.

How is BioSmart charged?

Garments made with BioSmart technology must be washed initially using EPA-registered chlorine bleach to charge the fabric. Every wash cycle must include EPA-registered chlorine bleach to recharge the fabric.

Will fabrics made with BioSmart technology work with peroxide bleach?

No, BioSmart requires EPA-registered chlorine bleach.

What if chlorine bleach is used that is not EPA-registered?

EPA-registered bleach has been tested to be effective at the directed use levels. Use of non-registered bleach may not provide adequate charging of the fabric with chlorine.

Can I use color safe bleach?

No, EPA-registered chlorine bleach must be used. BioSmart technology is designed to work with EPA-registered chlorine bleach. Minimal fabric fading will occur over time.

Can I use detergent with bleach in it?

Yes, but a detergent with bleach cannot be used by itself. An EPA-registered chlorine bleach must also be added to the laundry cycle.

Are fabrics made with BioSmart technology rated to AAMI PB70 level 1, 2, 3, or 4?

No, fabrics that meet AAMI PB70 are designed to be used as medical barrier fabrics. BioSmart is not currently designed for this use.

If BioSmart is used in a face mask, is it hazardous to breathe?

After charging according to instructions, the amount of chlorine that could be released is below established exposure risk levels.

Can products made with BioSmart be put into the dryer?

Products made with BioSmart technology can be dried according to any commercial method without harming the durability of the technology.

Will BioSmart cause skin irritation?

Fabrics made with BioSmart technology have been tested to ISO 10993-10 without evidence of skin irritation. In addition, fabrics with BioSmart technology have been tested for cytotoxicity according to ISO 10993-5 and no evidence of cell toxicity was observed.

Do BioSmart fabrics have a face or back? Do they need to be used in a certain orientation?

No, the finish is impregnated into both sides of the fabric. Some styles may have a face or back for aesthetic reasons, but the BioSmart technology is on both surfaces.

Which microbes does BioSmart protect against?

For a list of specific microbes, reference the EPA-registered chlorine bleach label under the laundry directions. BioSmart should be used as one component of an overall infection prevention program. All standard hygiene and disinfection procedures should be followed.

Laundry Instructions

BioSmart™ is a patented Milliken technology that binds chlorine bleach from the wash cycle to the surface of the fabric. Products with BioSmart technology must be washed with an EPA-registered chlorine bleach* to charge the fabric prior to each use. BioSmart technology is durable up to 75 launderings.

Home Laundering Instructions

For home laundering, the initial charge procedure and the recharge (maintenance) procedure for BioSmart™ are the same, except that detergent is not required in the initial charge wash. In each case, EPA-registered chlorine bleach must be used.

- All EPA-registered bleach products have instructions for laundry sanitization on the label. Most of them indicate that the proper concentration is ½ cup per standard home washing machine load. Some of the bleach products may vary in concentration and recommend a different level, so please check the label of the bleach that you are using. Do not use color-safe bleach.
- Use a regular laundry cycle and be sure to include the rinse step. Failure to rinse the fabric can result in local concentrations of chlorine bleach that may cause irritation to sensitive individuals. After the rinse, you may not be able to smell a bleach odor, but the chlorine bleach is still bound to the fabric.
- Detergent is not required for the initial charge but should be used for all maintenance washes along with the EPA-registered chlorine bleach.
- The fabric can be dried in any manner (tumble drier, line dry, etc.) without affecting the performance.
- BioSmart is engineered to recharge when laundered with an EPA-registered chlorine bleach.* The technology is durable up to 75 launderings.

Industrial Laundering Instructions

For industrial laundering, it is recommended to use a higher concentration of chlorine bleach (500 ppm) for the initial charge. For the maintenance washes, the chlorine bleach level can be 100 ppm, and detergent should be used. Example formulations and procedures are provided on the next page. These examples are a guide; please consult with a reputable wash chemistry supplier to optimize the procedure for specific equipment. In each case, EPA-registered chlorine bleach must be used.

* When laundered according to the EPA-registered chlorine bleach care label instructions

Industrial Laundering Example Formulations and Procedures

Initial Charge Wash Example Procedure

CYCLE	TIME (MIN)	LEVEL	TEMP (F)	SUPPLIES	OZ/CWT	NOTES
Break	6	HIGH	140	Alkali Detergent	1 1	
Flush	2	HIGH	140			
Sour	2	LOW	140	Sour	1	
Flush	2	HIGH	140			
Bleach	12	LOW	140	Hypochlorite* (12%) or Hypochlorite* (6%)	60 120	500 ppm
Rinse	2	HIGH	120			
Antichlor/ Sour	4	LOW	100	Antichlor Sour	1 3	Target Fabric pH of 6-7
Extract	3					
Shakeout	1					

Maintenance Wash Example Procedure

CYCLE	TIME (MIN)	LEVEL	TEMP (F)	SUPPLIES	OZ/CWT	NOTES
Flush	4	HIGH	110	Alkali Detergent	1.5 1	
Break	12	HIGH	150	Alkali Detergent	12 12	
Carryover	2	HIGH	150			
Flush	2	HIGH	150			
Bleach	10	LOW	140	Hypochlorite* (12%) or Hypochlorite* (6%)	12.5 24	100 ppm
Rinse	2	HIGH	130			
Rinse	2	HIGH	115			
Antichlor/ Sour	4	LOW	100	Antichlor Sour	1 2	Target fabric pH of 6-7
Extract	3					
Shakeout	1					

Chemical amounts are expressed in ounces per 100 pounds of garment load (oz/CWT).

*Use EPA-registered bleach

As each customer's use of our product may be different, information we provide, including without limitation, recommendations, test results, samples, care/labeling/processing instructions or marketing advice, is provided in good faith but without warranty and without accepting any responsibility/liability. Each customer must test and be responsible for its own specific use, further processing, labeling, marketing, etc. All sales are exclusively subject to our standard terms of sale posted at www.milliken.com/terms (all additional/different terms are rejected) unless explicitly agreed otherwise in a signed writing.

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