

Quality

Microfiber is a man-made synthetic fiber of linear density below 1 denier. It is constructed of a star shaped polyamide (nylon) center surrounded by pie shaped polyester wedges. During manufacturing, these wedges separate or split from the center to form individual “blades”.

The average fiber is 100 times smaller than a human hair. These tiny fibers penetrate microscopic surface pores and possess a positive electrostatic charge which attracts, collects and holds dirt, dust, bacteria, pollen, and other organic particles that have a negative charge. Also, the density of the material enables it to hold six times its weight in water, making it more absorbent than a conventional cotton cloth or mop.

The key performance characteristics of microfiber is the size, shape and concentration of split microfiber in the product. It is virtually impossible for the human eye to see the differences between microfiber products, but under magnification the differences become distinct. The quantity of microfiber varies greatly from one product to another. High performance cleaning textiles have over *300,000 fibers “blades” per square inch* that reach into microscopic crevices to remove pathogens from environmental surfaces. Fibers with blades smaller than *.1 micron* are needed to pick up many pathogens, such as H1N1. A product with a high concentration of these precision fibers means greater surface contact for better performance.¹

GREENSPEED QUALITY STANDARDS

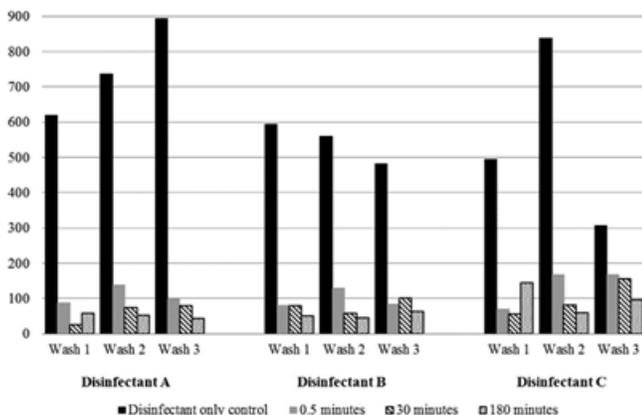
GREENSPEED	Microfiber blades/sq. inch	Microfiber blade size
ORIGINAL cloth	862,000	0.1 denier
BASIC cloth	540,000	0.1 denier



Greenspeed products meet the extremely stringent environmental, quality, health and longevity requirements of the Nordic EcoLabelling program.

Superior Cleaning

Recent research demonstrated that microfiber cloths can remove significantly more *C. difficile* spores from surfaces compared with cotton cloths. In addition, the ability of microfiber cloths to retain spores provides convincing evidence that this cleaning approach could reduce transfer of microorganisms.²



Release of *Clostridium difficile* spores from an inoculated microfiber and cotton cloths to a clean ceramic surface.

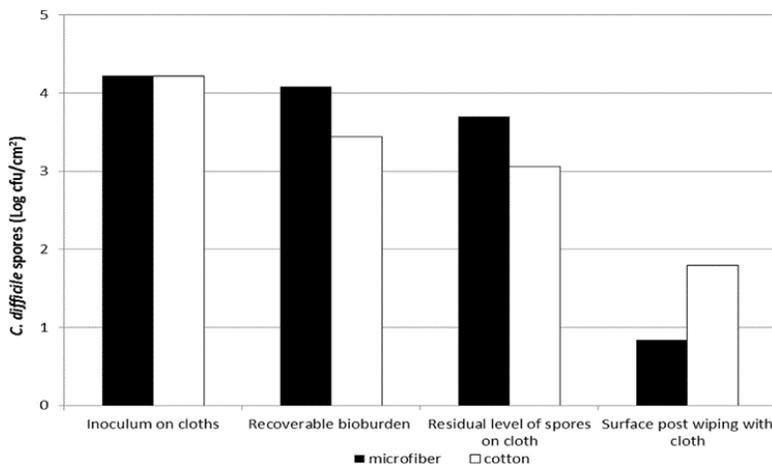
Inoculated microfiber and cotton cloths were used to evaluate the transfer of spores from the cleaning cloths to ceramic surfaces using the drill apparatus. The results for microfiber cloths are represented by black bars, and those for cotton cloths are shown as white bars. *cfu*, colony forming units.²

Cleaning (con't.)

- ✓ In November 2002 the EPA published Environmental Best Practices for Health Care Facilities, which emphasized the use of microfiber technology in hospitals.
- ✓ Several studies have determined that microfiber is better than cotton at capturing bacteria. The University of California, Davis Medical Center compared the amount of bacteria picked up by a cotton-loop mop and by a microfiber mop. The cotton-loop mop reduced bacteria on the floors by 30%, whereas the microfiber mop reduced bacteria by 99%.³
- ✓ Because microfiber mopping system uses less water and chemicals, it reduces the amount of water and chemicals handled and it eliminates the need to wring the heavy cotton mops, resulting in less potential for worker injury.

The Problems with Cotton

1. Quaternary ammonia compounds (QAC) concentrations are reduced by up to 85.3% after exposure to cotton towels resulting in failure of the disinfectants exposed to cotton towels in 96% of the GSTs.⁴



QAC concentrations in each of 3 commercially available substances before and after repeated exposure to cotton towels and laundering.⁴

2. Cotton is an organic product and can serve as a source of nutrition for bacteria.
3. Cotton fibers are too large to trap and remove bacteria, viruses and small dirt particles. Lint, debris, and hair becomes entangled in the fibers and often remains in the product throughout the laundering and drying processes.
4. Cotton fibers break down easily and transfer to environmental surfaces.



GREENSPEED OFFERS A TOTAL SOLUTION OF INNOVATIVE MICROFIBER PRODUCTS AND HIGH QUALITY CLEANING TECHNOLOGIES.

1. Infection Prevention through Superior Cleaning, Smart Solutions, February 2010.
2. Microfiber cloths reduce the transfer of Clostridium difficile spore to environmental surfaces compared with cotton cloths, American Journal of Infection Control 43 (2015) 686-9.
3. Environmental Protection Agency, Using Microfiber Mops in Hospitals, Environmental Best Practices for Health Care Facilities. 2002. Region 9 Pollution Prevention Program.
4. Decreased activity of commercially available disinfectants containing quaternary ammonia compounds when exposed to cotton towels, American Journal of Infection Control, 41 (2013) 908-11.