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[redacted]

January 29, 2020

Re: Blue and Orange Wiping Cloths and Mops - Healthcare Grade Ultrafine Microfiber (HGUM)© Textiles

Dear [redacted]

Because there are many grades of microfiber textiles, the following definitions must be used to confirm the integrity of Infection Prevention Textiles, aka Healthcare-Grade Ultra-Microfiber© (HGUM)©.

The following parameters and characteristics shall define Infection Prevention Textiles, aka Healthcare-Grade Ultra-Microfiber© Textiles

- Bi-Component (Polyester [PET] and Polyamide [Nylon 6] Split Microfiber - Minimum 16 split; made from two components - polyester and nylon. The split percentage is >90%.
- Fiber size is less than 0.3 denier or 1.5 microns/micrometer/ µm
- No foam, no cellulosic material such as rayon or cotton in the mop substrate, backing, or padding.
- Must meet CDC Guidelines for Laundry Processing (ability to withstand washing at 160° F for 25 minutes with at least 125 - 150ppm of bleach and drying until dry)[2]
- EPA Registered Hospital Grade disinfectant compatible[1]

Laboratory test results show that Rubbermaid/Cintas co-engineered Blue and Orange wiping cloths and flat mops (HGUM© textiles) meet the definitions listed above.

These HGUM© textiles submitted measured 0.13 denier and are compatible with acceptable reprocessing to CDC Hygienically Clean Standards[3]. i.e. the referenced HGUM© textiles may be laundered to CDC Guidelines noted above to achieve low levels of microbes and be deemed hygienically clean. After laundered samples of the referenced HGUM© textiles are copied onto culture medium, nine out of ten samples have no more than two microbe colonies per 10 $cm^2$ after incubation.

Laboratory testing has also demonstrated the referenced HGUM© textiles are 100 percent compatible with quaternary ammonium compounds (disinfectants) and all current U.S. EPA Registered Hospital-Grade Disinfectants. Laboratory test results reported by Nova Biologicals on November 19, 2019, demonstrate that the referenced HGUM© textiles do not alter the measurable activity of quaternary ammonium compound disinfectants (i.e., #40 3M Disinfectant Cleaner).

Additionally, laboratory test (Nova Biologicals Report M35421/111417) results show that the referenced HGUM© textiles alone remove greater than 99.999 per cent of the microbes on surfaces. These test results represent a greater than 5-$log^{10}$ reduction of microbes.


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The combined bacteria removal efficacy of the referenced HGUM© textiles and a quaternary ammonium compound disinfectant was determined to be 100 percent or greater than 7-log$^{10}$ reduction in bacteria.

Utilization of the referenced HGUM© Textiles, accepted practices, and other EPA Registered Hospital Grade Disinfectants should also result in 100 percent removal or greater than 7-log$^{10}$ reduction in microbes.

Challenge microbes are defined below as tested according to the following opportunistic pathogens known at the time of testing and include gram positive and negative bacteria, small viruses, fungi and bacterial spores.

Inoculum levels tested represent pathogens prevalent to the healthcare industry for nosocomial infections (HAIs)

Low-Level Disinfection: This test requires a 5-log$^{10}$ reduction of four common vegetative organisms (i.e., Klebsiella pneumoniae, Pseudomonas aeruginosa, Escherichia coli, and Staphylococcus aureus)

- Staphylococcus aureus ATCC 33591
- Feline calicivirus ATCC VR-782 as surrogate for Norovirus per ASTME 2011-09
- Escherichia coli ATCC 27853
- Pseudomonas aeruginosa ATCC 27853
- Klebsiella pneumoniae ATCC 23357
- Clostridium difficile ATCC 43598
- Acinetobacter baumannii ATCC 19606 or 43498

[1] https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants
[2] https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/laundry.html
[3] https://www.researchgate.net/publication/7767411_Implementing_hygiene_monitoring_systems_in_hospital_laundries_in_order_to_reduce_microbial_contamination_of_hospital_textiles

Please contact me if I can provide additional information or clarification.

Paul J. Pearce, PhD
Specialist in Microbiology, ASCP Board of Certification
President and Laboratory Director, Nova Biologicals, Inc.


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January 23, 2017

[redacted]
Association for practitioners of infection prevention (APIC)
Environmental Services Optimization Playbook (EvSOP(C)) Project(C)
[redacted]

Dear [redacted]

Because there are many grades of microfiber textiles it is essential that the following definitions be used to confirm the integrity of Infection Prevention Textiles aka Healthcare Grade Ultrafine Microfiber.

Infection Prevention Textiles aka Healthcare Grade Ultrafine Microfiber (HGUM(c))Textiles shall be defined by the following parameters and characteristics.

1. Bi-Component (Polyester [PET] and Polyamide [Nylon 6] Split Microfiber - Minimum 16 split; made from two components - polyester and nylon. The split percentage is >90%.
2. Fiber size is less than 0.3 denier or 1.5 microns/micrometer/ µm
3. No foam, no cellulosic material such as rayon or cotton in mop backing or padding
4. Must meet CDC Guidelines for Laundry Processing (ability to withstand washing at 160° F for 25 minutes with at least 125 - 150ppm of bleach and drying at 160° F until dry.
5. EPA Hospital Grade disinfectant compatible

Additionally, the following considerations are essential when Infection Prevention Textiles aka Healthcare Grade Ultrafine Microfiber Textiles are tested to determine their efficacy for removing microbial contamination from environmental surfaces.

1) Testing laboratory must be appropriately certified by a recognized Federal or State certification authority e.g. ISO, A2LA, EPA, NELAC, etc.
2) Test challenge inoculum must be between log $10^8$ and log $10^{10}$ and suspended in suitable soliant
3) Battery of challenge microorganisms must include gram negative and gram positive bacteria, Clostridioides difficile spores, Aspergillus niger spores, feline calicivirus (surrogate for human norovirus), Candida albicans
4) Methods, means and equipment for test article (test sample) preparation
5) Test surface e.g. stainless steel, vinyl tile, glass, plastic, hospital mattress etc
6) Four field test method or validated equivalent method

Please contact me if I can provide additional information or clarification.

Sincerely,

Paul J. Pearce, PhD
Specialist in Microbiology (SM/ASCP Board of Certification)
President, Nova Biologicals, Inc.