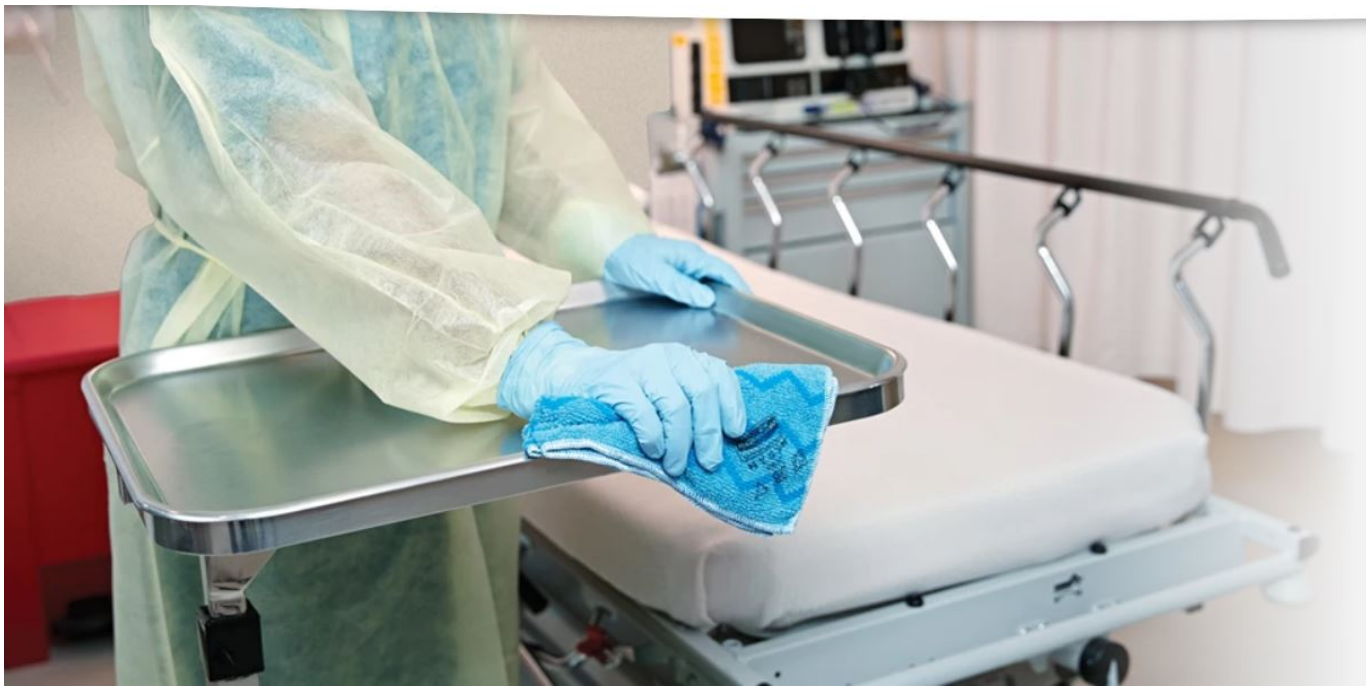

Facility Safety

Whitepaper: Wiping Away Uncertainty: When to Use Disposable Microfiber

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EXECUTIVE SUMMARY

Microfiber is well known both as a powerful cleaning textile and as an "essential tool in an infection control program,"[1] owing to its highly efficient and effective ability to remove organic matter and microbes from surfaces.[2-3] What may be less well known is that microfiber actually comes in two forms: launderable (also called durable or reusable) and disposable microfiber. While launderable microfiber has played a major role in cleaning and disinfection for decades, disposable microfiber (DMF) is a relatively newer development—one that offers the evidence-based value of microfiber but in a single-use, disposable form.

DMF has been high in demand in recent years, in large part because, by virtue of its single-use nature, DMF offers a reduced risk for cross-contamination through encouraging the use of a new cloth for each surface and task. This is a fundamental principle in surface cleaning, often called the "1 wipe, 1 application" or "1 wipe, 1 site" policy,[4-6] based on a robust body of evidence showing that cleaning cloths can become contaminated during cleaning and subsequently spread pathogens from one surface to another.

While disinfectant-impregnated disposable wipes are designed to encourage the same principle, research has shown their efficacy can be limited by the range of materials from which they're made as well as the moisture content/wetness of the wipe,[7-10] wipe product storage time,[11] wipe packaging,[9] application time,[5,8,10] and presence of soiling.[12]

DMF also possesses a number of unique features that collectively set it apart from other disposable cleaning textiles. Quality DMF is distinguished by its high absorbency, powerful cleaning performance, chemical compatibility, enhanced microbe removal, and durability all of which are, to a certain degree, a product of its small fiber size, large surface area, and durable polymer construction.

Importantly, there are no "right" or "wrong" times to use either disposable or launderable microfiber when proper cleaning technique and laundering processes are followed. Yet, there are some scenarios for which disposable microfiber is uniquely suited, largely based on clinical risk—be it risk of improper handling, risk posed to people (e.g. patients), or risk posed by the environment.

HYGEN™ disposable microfiber is purposefully engineered to serve as the optimal product choice for these scenarios, providing the innovative, evidence-based technology of HYGEN™ microfiber in a single-use form. HYGEN™ disposable microfiber is constructed from premium polymers for optimal cleaning performance and chemical compatibility, proven to remove 99.7% or more of tested, clinically relevant microorganisms, and created with a low-linting, single-use design to reduce risk of cross-contamination.

As the scope of cleaning and disinfection in healthcare and beyond has broadened, so has the need for a wider range of cleaning products. Careful consideration of all factors, ranging from laundry to staffing to infection risk, can help a facility choose the optimal microfiber product, or combination of products, to meet their needs and achieve the desired outcome—stopping infection in its tracks.

IINTRODUCTION

Microfiber has been described as an "essential tool in an infection control program"[1] and for good reason. Its small fiber size, large surface area, and electrostatic charge translate into a product that is both highly efficient— helping to reduce water/chemical consumption and cleaning times, and effective—providing powerful cleaning performance and microbe removal.[2-3]

Although we often refer to microfiber as a single category of textiles, it is important to note that it actually comes in two forms: disposable and launderable (also called durable or reusable) microfiber. Launderable microfiber long predates disposable microfiber (DMF), having first appeared on the scene in the 1970s, ultimately causing a paradigm shift in cleaning practices as facilities increasingly transitioned away from cotton and other textiles to microfiber.[2-3] But over the past decade DMF has become a 'hot commodity', begging the questions of what exactly disposable microfiber is, how it differs from other disposable options, and, finally, when to use it?

MICROFIBER BASICS

In order to best understand the "what," "how," and "why" behind disposable microfiber, it is helpful to understand what defines all microfiber. At its most basic, the term "microfiber" refers to a synthetic fiber measuring less than one denier, a unit of measurement for the linear weight or mass density of fibers, or more simply, a measurement of the fiber thickness.[13-14] To put this in relative terms, a human hair measures in at roughly 20 denier, so a microfiber is exactly what the name implies: a "micro" or very small fiber.

> **The CDC further states that the "actual physical removal of microorganisms and soil by wiping or scrubbing is probably as important, if not more so, than any antimicrobial effect of the cleaning agent used".**

Each microfiber is made from synthetic polymers, which provide it with some of its defining features, including tensile strength, durability, and cleaning power.[15] The polymer is forced through a mold to form one continuous fiber, or monofilament, of a very small cross-sectional diameter. This part of the manufacturing process is key, because microfiber's size is fundamental to how it works. A single microfiber cleaning product contains thousands of tiny microfibers which are able to trap microscopic particles, microbes and liquids within the intricate network of small fibers far more effectively than products comprised of larger fibers which tend to just push particles around a surface.[2-3]

While all DMF is traditionally monofilament and comprised of a single polymer (i.e. polyester), most launderable microfiber is often what is termed "split-blended." Split-blended refers to the fact that the microfiber is manufactured from a combination of polymers (e.g. polyester and polyamide) which undergo a "splitting" process that separates the polymers at their interface, further reducing the size of each fiber.

DISSECTING DISPOSABLE MICROFIBER

So, why is disposable microfiber in such high demand? The answer begins with its unique features that, collectively, account for its efficacy and efficiency and distinguish it from other disposable textiles.

Absorbency: Each disposable microfiber cleaning tool is comprised of thousands of incredibly small individual monofilament microfibers. Together, they endow the cleaning tool with a tremendous surface area—roughly 40 times that of cotton, allowing the microfiber to absorb up to 6-7 times its weight in fluid.[2-3] Importantly, the microfiber's design also allows for uniform fluid release so that the cleaning fluid with which they are used—be it water, detergent, or disinfectant—can be evenly applied to a surface.

Cleaning Performance: DMF constructed from quality polyester polymers provides powerful surface cleaning[16] which the Centers for Disease Control and Prevention (CDC) call the "necessary first step in any sterilization or disinfection process."[17] In fact, the CDC further states that the "actual physical removal of microorganisms and soil by wiping or scrubbing is probably as important, if not more so, than any antimicrobial effect of the cleaning agent used."[17] DMF's fine fibers effectively pick up dirt and debris, trapping and removing them from a surface.

Chemical Compatibility: DMF is made exclusively from polyester fibers which means it has minimal quaternary ammonium binding (quat binding)—a phenomenon in which other textiles, including cotton or some nylon-containing microfibers, attract and bind the disinfectant in the fibers, reducing the quantity of chemical available for surface disinfection.[18]

Enhanced Microbe Removal: Between the miniscule size of each microfiber and the large, collective surface area created by thousands of these fibers combined in one cleaning tool, it's little wonder that DMF is highly effective in removing microbes from a surface.[16]

Strength/Durability: Polyester is a highly durable material. When polyester polymers are melded together to form a single monofilament, the result is a fiber with significant tensile strength. This is fundamental to a cleaning product's efficacy, so that the pressure applied and the chemical used don't break down the cloth during the wiping process.[19]

Reduced Risk for Cross-Contamination: DMF's very name, disposable microfiber, highlights its most obvious but also most unique attribute: its single-use nature encourages use of a new cloth for each surface and task. This is a fundamental principle in surface cleaning, often called the "1 wipe, 1 application" or "1 wipe, 1 site" policy,[4-6] based on a robust body of evidence showing that cleaning cloths can become contaminated during cleaning and subsequently spread pathogens from one surface to another.[6,20-22] The 8-fold method (folding a cloth to create 8 fresh surfaces from one cloth)[23] and color coding are often used with launderable microfiber to facilitate the same practice. DMF are additionally low-linting, meaning they won't leave significant fiber residues behind that can generate cross-contamination.

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