



Personal Protective Equipment

Antimicrobial – Antiviral – Antibacterial: What Does This All Mean for Hand Protection?

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It used to be that the primary function of a pair of work gloves was to protect the skin on hands from getting scraped and bruised. With the invention of high-strength synthetic fibers, cut resistance was added as a critical protection need. And with different types of synthetic rubber developing at an ultra-rapid pace, dip and palm coatings on gloves were introduced to help improve grip and reduce slip-related injuries. Some coatings even covered the whole hand, ushering in the introduction of barrier gloves to the safety market that were designed to principally protect against solvents and chemical contact.

There are many terms used to describe the different types of gloves that are out there today. Outlining them is not the purpose of this blog. Rather, the purpose is to help you understand a new level of protection that safety managers are demanding; **PPE that helps protect workers against the transmission of viruses and bacteria** commonly found on shared surfaces or items – such as tools or parts that are handled by multiple workers.

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MICROORGANISM ACTIVITY

Before understanding how to protect ourselves, it is helpful to understand what we are protecting ourselves from – microorganisms. These microscopic viruses, bacteria and fungi are part of our ecosystem and even our bodies. We all are exposed to an innumerable amount of them on a daily basis, with most being nonpathogenic and necessary for maintaining overall good health and environmental conditions. However, for those that do cause harm, there's been an increased focus on solutions that minimize contact with them or eradicate them entirely if present on surfaces where they can be easily transferred. Eradication usually requires some type of disinfecting chemical that destroys the microorganisms on contact. For a chemical to be considered a disinfectant it must have efficacy testing and be registered with the **EPA** (Environmental Protection Agency) for non-food applications or with the **FDA** (Food and Drug Administration) if related to food safety. In the U.S., claims related to antimicrobial, antiviral or antibacterial cannot be made without efficacy testing AND registration with the appropriate regulating entity.

While eradication of these harmful microorganisms may not always be possible, in many cases protection is achieved by having an effective barrier present – one where even the smallest of bacteria or viruses cannot get through. Disposable or rubber gloves are predicated on this important point and were invented specifically for this reason. In the world of barrier protection, it is imperative that the barrier is effective, especially if you consider that the smallest bacteria are about 0.4 microns in diameter with viruses ranging in size from 0.02 to 0.25 microns, making them sub- microscopic. The most recent update to the **EN-374-1-2016** standard covers testing and performance levels for protective gloves against chemicals as well as microorganisms. Part V of this standard specifically covers performance requirements for microorganism risks. When one thinks about the size of these viruses, it is obvious that the barrier quality of the material being used to manufacture these gloves must be of the highest standard in order to protect against microorganism permeation.

One other straightforward approach to eradicating the presence of microorganisms on shared surfaces would be offering gloves that are somehow chemically treated to eliminate microorganisms on contact. This, unfortunately, is not currently possible. However, incorporating active silver ion technology as an additive to polymers can help maintain a consistently lower bio-burden due to active silver's naturally occurring antimicrobial properties – but it's important to reiterate that this is not a disinfectant that kills the microorganisms on contact, like bleach. The inherent antimicrobial properties of active silver and even copper have been known for centuries and are why many ancient food-bearing receptacles or instruments were made of these metals.

PROTECTING AGAINST MICROORGANISMS ON THE ASSEMBLY LINE

When it comes to workers on an assembly line, it is next to impossible to avoid touching shared surfaces, parts, tools or even touchscreens. Before the global pandemic, work gloves in factories or on job sites were specified to help protect against mechanical threats, heat or chemical contamination. The pandemic prompted many safety managers to start specifying added barrier protection against microorganisms in addition to the other job risks they needed PPE to help protect against. In 2019, at the height of the pandemic, global use of disposable gloves in industrial applications increased by up to 40% – primarily in an effort to help workers stay protected. Many were double gloving with a disposable under their work glove, introducing them to a new level of worker discomfort and possibly even risk. While high- quality disposable gloves do provide an effective barrier against contact with

microorganisms, they are NOT designed to protect against mechanical work hazards. They tear easily and prevent the skin from breathing, causing frequent change-outs which result in waste and loss of worker productivity – basically rendering them a less than effective solution for delivering complete hand protection to workers in industrial environments. They also are not tested against specific chemicals found in industrial work environments.

A BREAKTHROUGH TECHNOLOGY IN BARRIER PROTECTION

In November of 2020, Protective Industrial Products (PIP®) applied for a patent (patent-pending 63/119,080) on a new type of work glove that delivered barrier protection – with the test results to prove it. Starting with a thin, 18 gauge knitted liner, a highly effective coating was then applied to the entire hand area to deliver extended coverage to the whole hand – unlike regular coatings that provide limited and permeable coverage. This revolutionary new work glove is not just a coated seamless knit glove with an extended coating, it required new technology in the form of a proprietary coating that could be tested for liquid permeation as well as chemical and microorganism penetration under the EN-374 standard (and pass). This coating was also independently tested against specific viruses and bacteria, given its polymer also contains active silver ion technology as an extra level of protection. The advantage of this advanced technology is that it combines the proven protection of a barrier glove with the mechanical protection of a tough nylon or HPPE-based liner that's been tested to both the **ANSI 105** and EN 374 standards. The result? A work glove that workers can be confident using to help protect against both mechanical hazards and harmful microorganism- related activity while eliminating the need to double glove with disposables. Safety managers and job site managers appreciate the added level of barrier protection coupled with the reduced waste and litter that comes with discarded disposable gloves.

Learn more about PIP's G-tek® VR-X™ advanced barrier protection gloves here.

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