

Engineered Hybrids Increase

SAFETY

With all the new performance fibers and technologies, it was only a matter of time before we saw a new wave of uniforms that increase worker safety by weaving comfort and caution into a single garment – an engineered hybrid. Here are three examples.

By Tonia Cook Kimbrough

A Silver Bullet

At the beginning of the 20th Century, silver foil was used as wound dressing, making it one of the first recognized antibiotic treatments used in Western medicine. It continues to be used today in a slew of medical products, but perhaps most interesting is its recent incorporation into apparel for preventative antibacterial purposes as well as for comfort and odor-control.

Leading the way in this silver rush is Noble Biomaterials, the maker of X-Static, a silver-coated textile fiber. The material has become an important component in the lines of numerous athletic and outdoor sportswear brands, such as Fox River Mills, Pearl Izumi and Spyder Active Sports. While X-Static itself has been around for several years, you can now find hybrid engineered garments that combine the antimicrobial X-Static yarn with moisture wicking fabrics like Dupont's CoolMax Polyester, now available in athletic and workwear socks, for example.

Latitude 15 recently introduced a line of combined-performance shirts that incorporate the X-Static fibers with a cotton-based moisture control technology. The garments

create a “performance base layer which provides comfort of desired heat and moisture retention or rejection.” This is achieved by layering fabric technologies. The Alpaca-wool/silk blend shirts are given a base layer of Dri-Release moisture-wicking fabric with FreshGuard (by Optimizer Inc.), then further improved by weaving in the X-Static fibers.



PHOTO COURTESY OF LATITUDE 15

Latitude 15's straight-waist pullover line features a blend of baby alpaca and silk combined with “CoolPlus II” and X-static for lightweight warmth that resists odors. READER SERVICE #187

Bob Hardy, president of Latitude 15 explains the benefits: “The X-Static fibers provide the wearer with an anti-static property, which is helpful when traveling, particularly when you want to repel germ-related dust as you have in airplanes. It also has a thermodynamic feature, as the base layer's silver content expedites the development of body heat and moves it off and away from the body or, traps it if covered in a windproof layer. This can be critical in situations where workers might develop hypothermia.”

Case in point: Latitude 15 garments with X-Static have been worn by Weather Station employees in Antarctica, as well as at the Mount Washington Observatory. In both cases, the shirts kept the wearers warm, as well as odor-free. “They wore the shirts all season without needing to wash them,” Hardy says.

Flash Fire Fix

Another technological duo in which Dri-Release combines with another performance-based fiber is the DriFire line. DriFire fabrications are scientifically engineered to combine flame resistance

and moisture management without using topical finishes or harmful chemical additives. While the garments don't protect the wearer against *prolonged* exposure to flames, they are *very* effective at "self-extinguishing" – i.e. they do not burn like cotton or melt into the skin like a polyester-based garment does.

In fact, it was in April 2006 that the military banned the use of polyester-based uniforms because of the trauma the fabric created for burn victims. "In Iraq and Afghanistan the data began to show that when soldiers were wearing a melt-able fiber like polyester, nylon or spandex the fabric would melt into the wound, creating medical complications," says Dr. J.W. Moore, managing director of research at Optimer Inc., the maker of Dri-Release.

In contrast, DriFire is a monocrylic fiber that incorporates a small percentage of cotton. This modified acrylic is inherently flame resistant. "We worked very closely with the military and with fire fighters in developing DriFire," says Nick Frederico of Safety Systems Corporation. "They asked us to give them a garment with the performance they were used to having but with protection against burns." The result is a mid-weight performance fabric that combines fire resistance with comfort.

This hybrid-performance garment brings multiple benefits to those who wear it. In addition to tactical resistance against fire, it provides a comfortable environment for the worker via the Dri-Release technology. This keeps wearers cool and dry by wicking away moisture from the body. In stressful environments, comfort is a key factor in worker safety. Those who are calm and comfortable are more alert and attentive to dangerous situations.

Applications for these garments extend beyond the obvious fire fighters and military personnel. Consider also workers in the petroleum industry, chemical manufacturing facilities, laboratories and restaurant kitchens. These environments all have the potential for flash fires or flames.



1 In a test performed at the request of the U.S. Marines, DriFire garments were exposed to an 850-degree direct flame for 3.5 seconds. (Garment shown prior to fire.)



2 The outer garment was allowed to burn until the flames burned out (approximately 45 seconds). The test proved that DriFIRE was self-extinguishing. (Garment shown after flames burned out.)



3 There was only minor charring where the outer garment burned through, and the fabric did not melt or drip.

IntelliDry Means Security

Another advance in hybrid engineering comes from a partnership between The Fechheimer Brothers Co. (known for its public safety uniform brand, Flying Cross) and performance-fabric manufacturer Milliken & Company. Together they've created a line of natural stretch poly/cotton uniforms that feature StainSmart 3 and ColorSmart, producing a line called IntelliDry. "There are a lot of moisture wicking fabrics on the market, and a lot that have liquid repellency. IntelliDry combines both," says Fred Heldman, vice president at Fechheimer.

"People wearing our uniforms are public safety personnel. They're coming in contact with all sorts of substances in their work. These garments provide them with the liquid-repellent protection they need for peace of mind, with the comfort of moisture-wicking properties," Heldman says. As a test to convince clients of the garment's efficacy, Heldman recommends distribu-

tors demonstrate by using an eyedropper of water. Place water droplets on the inside of the garment, and the water is wicked away from the body through the fabric. Place droplets on the exterior of the garment, and the water is repelled.

An added benefit for IntelliDry uniforms is that they're also engineered with Milliken's ColorSmart deep-dye process, which keeps uniforms colorfast and looking sharp.

Feedback from those already wearing these smart uniforms has been positive. The Alabama State Patrol; Raleigh, NC, Fire Department; Kentucky Department of Corrections; and United Nations Security are a few examples of the garments in action. Heldman lists police, sheriffs, fire, EMS, corrections officers, park rangers ... anyone who deals with the public and security issues as candidates for an IntelliDry uniform. ♦

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