



No flapdoodle about this hybrid


Flapdoodle is a word that has been in common parlance in the USA since 1889, but it took a recent copy of the *New York Times* to bring it to our attention for the first time. On checking the dictionary, we found that it means humbug or nonsense, and it had resurfaced in discussions that were going on about the politics of war in Iraq. Politics is always an area for different flapdoodling opinions but the need for special application performance textiles and clothing is certainly not a matter of flapdoodle, as was outlined in the *WSA* feature article in November/December 06, 'The Iraq factor in textile technology'. One specific area of great concern has been the problem of safe, synthetic combat T-shirts but it seems as if even that issue has now been resolved.

Just as that issue of *WSA* was going to press, yet another company entered the textile battlefield with what has been described as a revolutionary line of performance wear. The new line from Safety Systems Corporation (SSC), based in Roselle, Illinois, USA, is based on an engineered hybrid, providing an optimal combination of flame resistance, moisture management and comfort.

Founded in 1981, SSC regards itself as the oldest established business of its kind in supplying tactical and assault equipment to the military and anti-terrorist teams, as well as police emergency services and major security companies. In this instance, however, the problem of fire resistance does not appear to have been an easy one for it to resolve. It took



Next-to-skin comfort is important for all apparel all the time, but never more so than for members of the armed services.

 Optimer

the company, with its partner Optimer Performance Fibers, some two years to come up with the right product for garments to be worn next to the skin. Providing fire resistance to outerwear would appear to be relatively simple by comparison, but the new first layer product line of T-shirts, vests and pants had to remain dry and comfortable, as well as fire resistant.

In the airline industry, fire resistance can take on a very different complexion. In many instances, systems are tested as a whole, such as seats, so that in theory individual seat components do not have to meet the same demanding standards if the final outer layer in construction protects them. With military uniforms there is no such luxury: soldiers need every layer to provide appropriate protection.

Most military issue undergarments were traditionally made of cotton. In Afghanistan, however, the military has encountered a harsh environment where temperatures shift rapidly between desert heat and extreme cold. Cotton garments retained moisture resulting in severe chills and even hypothermia. Identifying the need for moisture wicking features in their 'first layer', many soldiers switched to polyester-based performance products.

In Iraq, however, hazards are different. Flash fires from explosive devices could cause polyester-based products to melt and drip onto the skin.

A massive search began for a fabric that was lightweight, comfortable next to the skin and wicked moisture, yet is flame resistant. Heavy-duty fabrics such as those used by firefighters might be fire resistant, but certainly can't supply the all-day comfort factors. A new solution was needed.

"We wanted to create a line of undergarments that combined flame resistance and moisture management while remaining very comfortable," states Todd Wilson, CEO of SSC. So the company approached Optimer Performance Fibers, based in Wilmington, USA, a textile research, development and marketing company that was founded in 2001, and today is credited with over 100 patents and developments, including Dri-release, a patented, intimate blend of hydrophobic and hydrophilic fibres that accelerates the water release rate of a fabric when wet.

Two years in development

"It might have taken two years in development but the result is everything that SSC asked for," says Beth Moore, managing director of operations at Optimer. "In addition to its typical moisture management capabilities, the new Dri-release 'FR' version is not only self extinguishing but quickly turns to ash and, most definitely, does not melt or drip." SSC is marketing the new line under the dri-FIRE name. As with other Dri-release products, dri-FIRE delivers accelerated high performance moisture management yet feels soft like a natural fibre against the skin. It will deliver the moisture management and flame resistance the military requires but will also help keep personnel feeling fresh while in the field. Optimer's FreshGuard ingredient in dri-FIRE was seen as a welcome addition – so much so that Moore says in presentations to military buyers that FreshGuard was regarded as a key part of the sale.

Optimer sees its technology as set apart from other moisture management products because of its effective balance of wicking and fast drying time plus its permanently built-in



T-shirt, boxers and long pants featuring Optimer's dri-FIRE.

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FreshGuard odour neutraliser. Rather than just spreading moisture across its surface, Dri-release actually pushes it to the outside of a garment, releasing water and perspiration. Tests show it dries four times faster than cotton and faster than any other performance fabric on the market – including 100% polyester. Unlike many moisture management products, both of the technologies are permanent and will not deteriorate incrementally with each wash and wear. Key to the technology is the combination and blending of its hydrophobic and hydrophilic fibres. Not limited to a specific fibre content, individual versions have been developed to suit various customers' needs since it was patented in 2000. Two such examples are Dri-release Wool that adds (no-itch) extra warmth and Dri-release SeaCell Active that is naturally anti-microbial.

The new dri-FIRE products will be sold directly through SSC as well as through its distribution network. Short and long sleeve T-shirts, boxers and long pants are currently available in silk weight. Mid- and heavy-weight versions, along with a fleece jacket, vest and hat, will be offered in spring 2007.

It's encouraging to learn that, when it comes to basic safety and well-being, the military isn't being fobbed off with flapdoodle. 