

# Protecting those armpits

**A**ctive people refuse to smell bad anymore. Or, put more elegantly, they won't accept clothing that smells bad. This point is highlighted by the growing demand for apparel equipped with one of the various antibacterial products on the market today. Manufacturers have launched an attack on the pesky microbes that cause body odour in a variety of ways, from traditional chemical applications through an array of silver treatments to the use of naturally antibacterial fibres such as bamboo, hemp or chitosan, a product derived from the shells of crabs and other shellfish.

Antibacterial properties, or antimicrobial as some companies prefer to call them, are just one of the now many qualities desired by manufacturers and consumers in multi-functional apparel. Others include moisture management, flexibility, easy care and durability. North Carolina-based Unifi is a prime example of a provider of multiple performance technologies for functional fabrics. The polyester and nylon yarn specialist is quickly gaining market acceptance with its aio (All In One) technology, which combines the effects of its Sorbtek moisture management, Mynx UV protection, Reflexx stretch, and A.M.Y. antibacterial yarns.

Unifi's A.M.Y. polyester yarn, which employs a silver additive to achieve its antibacterial properties, has been commercially available for about three years, but Bett Anderson, Unifi's marketing manager, says usage has grown considerably over the past year. "Fabric developers and consumers are more aware of it now and what it can do for them," she says. "The difference between ours and other antibacterial products is that ours is permanent and it won't wash out or wear off." A.M.Y. is currently only available in polyester, but Unifi is currently carrying out development work in nylon.

One of the companies using A.M.Y. is Terry Precision Cycling, a specialist in products for female cyclists. Unifi's Anderson says the growing trend of body mapping garments now involves antibacterials which can be engineered into strategic areas of garments such as the underarm areas, creating a technical garment.

Another burgeoning area in fibres is recycled or eco-friendly yarns. Unifi will join this parade at the Summer Outdoor Retailer Show with its new Reprieve recycled yarn product. There will be two versions of Reprieve, one of which will be comprised of post-consumer content.

"The unique thing is that we are recycling our



 Malden Mills



*Unifi will launch its new Reprive recycled yarn product at Outdoor Retailer.*



own waste," says Anderson. "As we manufacture yarn, we generate waste that in the past we've sold off to another end use. Now, after 30 years, we have developed a process where we can break those materials back down, saving the natural resources it takes to produce polyester." Malden Mills is one of the first users of the Reprive fibre, unbranded, in various fleece applications. Anderson says Unifi will launch Reprive under its aio offering, combining it with its Sorbtek and Reflexx products. Unifi is not currently using A.M.Y. in Reprive.

Another well-respected multi-functional approach that has become well accepted in many sports categories is to use Dri-release. Optimer's Dri-release uses a patented blend of natural and synthetic fibres that feels like cotton and keeps wearers comfortable, dry and odour-free.

Dri-release wicks moisture away from the skin and is soft to the touch. A Freshguard odour neutraliser built-in to the yarn virtually eliminates odour. The activated state of the Dri-release creates an environment within the fabric that inhibits the formation of body odour without killing any healthy body bacteria on the skin, or affecting the skin chemically.

### Antimicrobial chemistry is 15 years old

Mimi Cartee of Ciba Specialty Chemicals says antimicrobial chemistry has been used for about 15 years with the first applications appearing in medical fabrics, filters, upholstery and bedding products. She says it has progressed quickly into consumer-oriented sportswear apparel. "Sportswear seems to be a good niche for the effect overall," Cartee says.

Antibacterial effects are also increasingly being used in combination with other textile chemistry technologies such as moisture management. "Those qualities are seen as beneficial by the consumer," she says. "The key for a company like Ciba or any other company that

manufactures finishes is that you have to balance the effect you get for the consumer with the technical requirements needed for garments such as durability of the effect. For example, the effects used in an article of clothing that gets laundered many times have to be compatible. From the manufacturer's standpoint, a product has to be easy to incorporate into their existing process." Cartee says Ciba's products are generally incorporated at the dyeing or finishing stage, before the fabric is cut and sewn. The main active ingredient used by Ciba in its products is Triclosan, which it sells in several different forms.

Israel-based nylon yarn specialist Nilit also uses silver in its Sensil BodyFresh antibacterial yarn. "The antibacterial yarn has become a much needed yarn, and this is in line with the well-being lifestyle, and therefore, many yarn producers are looking for solutions in this direction, mainly for activewear and sportswear," says Oded Breier, Nilit's marketing manager. "It seems likely that more solutions of this type will become available in the near future and it will be based on different products replacing cotton in parts of garments." Another popular yarn with silver content comes from Noble Biomaterials, in the USA, a firm formerly known as Nobel Fiber Technologies, which sells and licenses the use of proprietary silver-coated textile fibres to sportswear and apparel companies as a performance component brand, X-Static. Leading manufacturers of hosiery, apparel and footwear currently use it. The brand is also gaining popularity in the military and is now being used in end-use products such as pilot headgear, body armour, combat uniforms and jackets, socks and boots. X-Static is a permanently bonded, universally coated silver fibre and is currently available as silver-coated nylon filaments, micro-fibres, staple fibres, foams, micro-particles and fabrics. Malden Mills

uses X-Static in its Polartec Power Dry fabric, which is used in warm weather technical shirting, long underwear and extended-use base layer applications.

Switzerland-based technical fabric developer Schoeller is releasing a new antibacterial silver finish this summer, and will also unveil it at Outdoor Retailer. The new development prevents the unhindered multiplication of bacteria and provides a fresh hygienic effect thanks to the hygienic silver finish. It can be added to Schoeller's fabrics by itself or in combination with other Schoeller technologies such as 3XDRY, NanoSphere, PCM and c-change.

Indera Mills, one of the largest US suppliers of thermal underwear, is offering a new line of performance products combining odour control with moisture management. It is marketed under the Indera Mills brand as well as private labels. It is the first thermal underwear line to use HydroPur Fiber technology from DAK Americas. It combines the moisture management of Hydrotec Fiber with the antimicrobial properties of SteriPur AM, which contains Milliken & Company's AlphaSan antimicrobial product. The antimicrobial properties, derived from silver technology, are integrated into the fibre during the polymer formation process and become a permanent part of the fibre.

### Silver is not always accepted

Jerry Miller, president of United Knitting, a leading developer of knitted technical fabrics, believes the antibacterial movement will grow even larger in the coming years. His company uses eight different antibacterial systems in various fabrics. He predicts further development of products, including alternatives to silver,



Sheila Moon cycling top antibacterial base layer with Dri-release wool.

 Dri-release

noting that some major companies refuse to use heavy metals in their products. A relatively new entrant into this field is another Israel-based firm, Cupron, which is using oxidised copper, which is less expensive than silver.

Companies are also turning to naturally antibacterial products such as hemp. One such company is Naturally Advanced Technologies. The company, in collaboration with Canada's National Research Council and the Alberta Research Council, has developed a biotech enzyme fibre technology called Crailar, using hemp, soy and bamboo and hopes to market it to performance apparel companies.

With so many new developments and further advances in the pipeline, it is unlikely that consumers will be able to kick up a stink over antimicrobial performance. 

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**val · id (vállid) adj.** well grounded in logic or truth; producing the desired results; efficacious



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