Many sports textile firms are building sun protection capabilities into fabric so that protection becomes part of people's daily routine. That way, simply by putting on your clothes you've taken the first step towards protecting your skin from ageing and serious health risks.

Safer fun in the sun



The number of skin cancer cases has increased dramatically in recent years. Currently, between two and three million non-melanoma skin cancers and 132,000 melanoma skin cancers occur globally each year. One in every three cancers diagnosed is a skin cancer and, according to Skin Cancer Foundation statistics, as many as one in five Americans will develop skin cancer during their lifetimes.

Ozone levels vary but, as they are depleted, the atmosphere loses more and more of its protective filter function and more solar UV radiation reaches the Earth's surface. It is estimated that a further 10% decrease in ozone levels would result in an additional 300,000 non-melanoma and 4,500 melanoma skin cancer cases. The main factors believed to cause the development of melanoma are connected with recreational exposure to the sun and a history of sunburn.

While the sporting goods industry is always encouraging people to get outside and lead active lifestyles, it also has a certain level of responsibility when it comes to protecting people from exposure to the sun. It's no good people lathering themselves in sunscreen on the beach and then going on a four-hour bike ride completely unprotected. Awareness about sun protection has increased in recent years, but it can be difficult to find outdoor and sports apparel that has all the performance benefits needed to keep going in sunny conditions as well as keeping the skin protected from harmful UV rays.

Coolibar's Suntect fabrics provide a UPF of 50+ for the lifetime of the garment.

Coolibar

Textile sunscreen

Recently launched in Europe, Suntect brand fabrics from Minnesota-based sun-protection clothing specialist Coolibar aim to do just this. Its fabrics offer an ultraviolet protection factor (UPF) of 50+ for the lifetime of any garment made from these fabrics.

The products include ZnO Suntect, which has millions of particles of zinc oxide, the main active ingredient in higher-end sunscreens, embedded into every fibre. The particles cannot wash or wear out. Another version is lite Suntect, a lightweight, breathable and durable fine-weave fabric, which this time blocks ultraviolet rays with titanium dioxide as a permanent component of the microfibres from which it is spun. Coolibar claims this fabric has a soft, cotton-like touch, but that as it is made from 100% nylon fibres, it will dry three times faster than regular cotton.

"Incorporating natural mineral compounds, such as zinc oxide or titanium dioxide, with well-established sun protection properties to the fibres of fabric does not cause skin irritation," comments company spokesperson Jennifer Annett. "These compounds effectively block damaging UVA and UVB rays yet cannot be absorbed into the human body. When using sunscreens the protective chemicals are rubbed on to the skin. There has been debate about this reaction and biological changes. In contrast, sun protective clothing fibres do not have these concerns."

The company's knit Suntect product is similar, but has a touch of elastane in its composition for comfort, stretch and shape retention, while its dri Suntect fabric is composed of polyester microfibres that offer a high level of moisture management in addition to UV protection using titanium dioxide blockers. Finally, aqua Suntect is described as "water-friendly" and ideal for lightweight swimwear, not least because it is available in a range of vivid colours. As well as UV protection, it offers resistance to salt water and to chlorine and has four-way stretch capability.

"Sun protective clothing is the best first line of defence against harmful exposure to the sun," Ms Annett claims. "Most often people use sunscreen as their protection; however, there are some drawbacks associated with using sunscreen. Many people do not put enough on and they neglect to reapply. Sun protective clothing solves this dilemma, particularly for those that need high quality protection outdoors, who may have used only sunscreen in the past with mixed results."

Going green

Another US-based brand, SunGrubbies.com, recently announced that it is making "greener sun-protective articles of clothing" available to its customers. The San Diego-based company said it wanted to provide the sun protection clothing with the smallest carbon footprint. It claims the key is using fabrics made from textile fibres that have been milled with minimal chemicals in the processing and that cause the least pollution. One example is its Ayana women's 100% cotton tees made from California and Arizona grown cotton. The T-shirts are sewn in Los Angeles where they are treated with zinc oxide and dyed with "environmentally responsible" dyes.

The company uses Cocona, which it claims is another state-of-the-art green fabric, in its collections. The sun protection factor of the Cocona Sun Tee for women and Solar Polo for men comes from finely ground carbonised coconut shells. The shells used in the fabric are particles that are too finely ground to be used in water filters. The recycled coconut shells are spun into polyester yarn during the milling of the fabric. These tiny particles also have the

Absorbing UV rays

Technical fibre and fabrics manufacturer Advansa launched a new version of its ThermoCool technology in June. In addition to the evaporative-cooling and thermo-buffering properties ThermoCool has always had, the new version, ThermoCool with UPF, offers increased protection against ultraviolet radiation from the sun. Three options, offering an ultraviolet protection factor of 15+, 25+ and 40+, are available.

"The multichannel fibres with their special cross sections, which are a part of [the] fibres in the yarn, help to disperse and absorb UV rays," says a company spokesperson. "A number of influencing factors, such as fibre type, fabric construction, colour and thickness of a fabric contribute to determining the UV rate."



ThermoCool with UPF contains multichannel fibres with special cross sections that help to disperse and absorb UV rays.

Advansa

According to the fibres specialist, polyester-based textiles offer better results than many other fibres. "The more density a fibre naturally offers, the more UV rays can be rejected," the company spokesperson explains. "PES is a very, very compact fibre, based on its molecular structure. In comparison, cotton, linen and viscose have open structures. Polyamide ranks between them and PES"

Additionally, ThermoCool's moisture management properties support its UV protection capabilities, as dry textiles have a higher protection than wet fabrics. "Wet fabrics are mostly more stretched than wet fabrics and consequently UV rays can more easily pass through the fabric. Additionally, water changes the light refraction, which leads to modified properties. Therefore, generally the UV protection of a wet fabric is significantly reduced." Advansa claims dry textiles can offer twice as much protection as wet ones, particularly when the wet fabric used is cotton.





Made from Cocona, the Solar Polo for men offers natural sun protection and moisture-wicking properties.

Sungrubbies.com

added benefit of wicking perspiration and filtering pollution without the need to add additional chemicals. Both the zinc and carbonised coconut shell have been tested for skin irritation problems without any problems, according to the firm.

The company's owner Marta Phillips says: "Wearing sun protective clothing has the advantage of reducing a person's chance of getting skin cancer and premature aging and eliminating a bad sunburn after playing. Also, many of the sun protective designs are made to help keep you cooler like mesh vents. Sunscreen is always the last resort since you will always be getting some rays through even with the best sunscreen. Fabric is always better than sunscreen." She accepts that not all of its clothing is "green", for example garments made using conventional cotton, but says it is doing its best to use as much environmentally friendly fabric as possibly. "[We] are definitely not using the obvious nasty ones like bamboo fabric," she says.

SunGrubbies.com says it has tested all fabrics for their ability to block the sun's ultraviolet radiation by an independent laboratory. The UPF rating in all of its garments will last for their lifetime which will further reduce the carbon footprint of each one and save money, it said. "We all play an important role in protecting ourselves and our environment from pollution and chemicals harmful to our bodies," concludes Ms Phillips. "Making decisions to sell environmentally friendly products, which are also sun safe, is one way our small company can help in reversing harmful pollution that is affecting us all."