From the sidewalks to the catwalks, cork is in the midst of a revival. Its insulating properties, among other performance attributes, makes it a surprisingly high-tech material whilst its low, some say negative (in the best possible sense), environmental footprint makes it a compellingly sustainable choice.

A new twist on cork

All the models presenting Chanel's haute couture collection last month wore cork-soled shoes, infusing the season with an unusually natural note. The material has been used to make footwear since the earliest times, and it has also been the preferred wine stopper for ages. It is now making its way into clothing thanks to the enterprising spirit of up-and-coming eco-minded brands and new developments in yarns and fabrics.

Last year, cork was one of the key new items developed by French eco-conscious brand Picture Organic Clothing, based in Clermont-Ferrand. Always looking for innovative and environmentally friendly materials, creative director, Jérémy Rochette, one of the brand's three co-founders, had identified cork as a possible material five years ago and pinned it on his mood board. Finding a suitable supplier took a few years before he was able to introduce it on a limited-edition jacket made with a fine layer of the material on the body. The 25 jackets produced were distributed via an online contest organised last fall. "We are always looking for natural or recycled materials that have functional properties," says Mr Rochette. Picture Organic works with recycled polyester fabrics, has pioneered a recycled polystyrene helmet and lines its clothes with fabric off-cuts. Cork, naturally, ticks many of its eco-conscious boxes. It is now used for the visors of its caps and as a lining for its woven labels. The stiffness of the material Picture Organic uses makes it more suitable for patches and labelling, the designer says.

Leather-like feel

Basus, another young French eco-brand, also uses the natural material as its signature detail. Florence Desmarty, the casual sportswear brand's designer, says 2014 was a turning point

The Tantum jacket by Peak Performance features a single fabric, Schoeller's corkshell, that the brand chose for its thermal properties and visual appeal.

Peak Performance

for the company when it first discovered and introduced cork, which has since become an essential element of its collections and concept store in Paris. Basus has chosen a very fine membrane-like cork material that has been treated to obtain the soft touch and mechanical resistance clothing manufacturing requires. Basus says it is as soft as Alcantara, the synthetic material that has made some headway in the automotive interiors business, and as sturdy as leather. "It is machine washable and it ages beautifully, like high-quality leather," says Ms Desmarty. The material is sourced in Portugal, where the brand manufactures its clothing.

Cork is also the highlight material of German streetwear label Bleed Organic. The brand launched a crowdfunding campaign on the Startnext platform to fund the project and raised €73,819. The brand chose a novel black-coloured cork that comes from the Montado region of Portugal. Among the properties that make cork a perfect fabric, the brand lists its high durability, thermal insulation, water repellency and lightness. "Cork is not only a renewable resource with special look, it is also of high value for the environment," the brand claims.

In the United States, the Cork Supply Company is yet another supporter of the material that it sources in Portugal. It emphasises its "natural, renewable, recyclable and biodegradable properties, all obtained through an environmentally friendly harvesting process" and has partnered with a non-profit, the Cork Forest Conservation Alliance.

The unconventional material may draw more attention when The Lost Explorer, a new brand created by eco-warrior David de Rothschild, comes to market. Few things are known of the company that defines itself as an 'outfitter for everyday explorers' except that a cork-based material from Swiss group Schoeller Textil will be the base for the first collection. "We chose this textile technology as it is both water resistant and highly breathable; not to mention that we believe it is a material that needs to be explored more in terms of applications and performance," declared Mr de Rothschild when the partnership was announced. The decision to use the material was the outcome of a meeting between Lost Explorer co-founder Jono Kirby and Tom Weinbender of Schoeller USA.

Novel soft shells

Schoeller's corkshell fabrics are made with Forest Stewardship Council certified cork granulate, a by-product of the production of wine corks. This granulate is pulverised and combined with the fabric in a process patented by Schoeller that is said to firmly bind the natural material to the textile substrate. Thanks to what Schoeller calls its bubble-form structure, a tight web of 40 million cells per cubic-centimetre filled with an air-like gas, corkshell fabrics can offer a thermal insulation 30% higher than conventional soft-shells. Schoeller exploits the material's natural stretch properties offering both two- and four-way stretch qualities. The Swiss company also points out that cork has antimicrobial properties, one of the reasons it is used in the wine industry. "Cork is an ecologically perfect raw material which can now be used for garments," it states.



LMA's new cork-based laminate is made with a layer of cork bonded to a recycled polyester piqué fabric and a waterproof/breathable membrane.

LMA

These performance features have made Schoeller's cork-based soft-shell attractive to a number of upscale sportswear brands, including Kjus, Peak Performance and Vozweimax (VO2Max). The material is one of the three Schoeller fabrics Kjus combined in its first hybrid ski jacket made for Swiss alpine ski champion Didier Cuche. An ISPO award winner in 2014, the Cuche Special Edition Jacket combined Schoeller's c-change membrane (offering weather protection), WB-400 (for breathability) and corkshell (for heat retention), all mapped out on the body to provide protection, comfort and freedom of movement. Peak Performance has adopted the material for a ski outfit in its high-end Black Light range, in which corkshell is the key material used.

New products being rolled out by Schoeller include two references made for workwear, a four-way stretch soft-shell in high-vis orange which is bluesign certified, and a two-way stretch fabric with antistatic properties for uniforms (certified EN 1149-5 antistatic).

Membranes and yarns

In Portugal, where most of the world's cork is produced today, local textile manufacturers are picking up the trend. LMA, based in Rebordões near Porto, was awarded the top honours in the Membranes & Coatings category of the ispo

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Two corkshell references by Schoeller Switzerland combining the insulating properties of cork with wool face fabrics.

Schoeller Textil

Textrends this year for its cork laminate, developed in-house. The regenerated cork material was presented in a three-layer fabric construction with a fine layer of cork bonded to a recycled polyester piqué fabric and a waterproof/breathable membrane, weighing 150 g/m^2. "Cork is a renewable resource that has many functional properties," says Filipa Silva Pereira, at LMA. "It is naturally odourless and antistatic. Its manufacturing does not require any solvents or dangerous compounds. And, in addition to its shock- and sound-absorbent properties, it is also vapour permeable."

Portuguese research and innovation institute Citeve has also been working on the material in partnership with cork specialists Sedacor, jacquard maker Têxteis Penedo and the Faculdade de Engenharia da Universidade do Porto (FEUP), the engineering faculty of the University of Porto. The result, Cork-a-tex, is a yarn made with 80% cotton and 20% cork.

The manufacturing process starts with the lamination of a layer of cork on a fabric which is then used to create a yarn that is spun with cotton and can be knitted or woven, says Citeve CEO Braz Costa. "Not only does cork have natural insulating properties, it also has a negative carbon footprint, as the trees are not cut down to harvest their bark." As the tree continues to grow, regenerating cork in the process, it continues to absorb carbon. He sees Cork-a-tex as a suitable material for home textiles, for its acoustic and thermal insulating properties, but also mentions "techno-fashion" as a possible end-market. "It is a very new, very different type of material," he adds. Cork-a-tex is machine washable and will be marketed in 2016.

Negative carbon footprint

Produced today as it has been for centuries, the forestry and harvesting of cork could make it one of the most sustainable performance materials around. Cork oaks, *Quercus suber*, can live up to 150 or 200 years. By law they remain untouched for nine years, the time it takes them to grow a new layer of bark. No tree is felled in the harvesting process and every single gramme of cork bark is said to be used. This traditional farming practice has been impacted by the switch from cork to plastic stoppers in many wine bottles and farmers view and uses favourably the development of new materials for the home or for fashion.



Eco-conscious brand Picture Organic Clothing's limited edition Worked Cork jacket.

Picture Organic Clothing

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