

New "cradle to grave" ski glove

Two sports textile innovators have teamed up to launch what they claim is the world's first ever recyclable ski glove. Swany America, backed by Swany Japan, has teamed up with Japanese textile firm Teijin Fibers to produce gloves that are made from recycled polyester and can be recycled over and over again.

Swany America has been making sport gloves for almost 20 years and has formed agreements with various organisations such as the Professional Ski Instructors of America, which has helped it develop products that fit the task. It produces nearly 50,000 pairs of gloves per week, making it the second largest manufacturer of winter sport gloves. The company employs almost 2,000 glove experts across five continents and has an existing dealer base comprising more than 600 sporting goods accounts in North America. It is also currently working on producing a heated glove, and a glove that is Bluetooth-compatible.

Teijin Fibers Limited is the Teijin Group's



Swany America's Eco-X gloves can be recycled through Teijin Fibers' Eco Circle recycling system.

Teijin

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polyester fibre operation. It is involved in research and development, manufacturing and marketing of materials and textiles made from polymer and polyester fibres. It is actively looking to expand its presence in the global sportswear industry and currently works alongside more than 100 registered apparel and sportswear manufacturers worldwide in developing products made from recyclable materials, as well as in collecting and recycling these products at the end of their useful lives. Overseas members of its recycling programme, Eco Circle, include major names such as Patagonia in the US and Quiksilver in France.

While technical innovation is clearly important to both firms, improving performance during the production process and post-production are also key. Not only will the collaborative project enable the same materials to be reused, it will reduce energy consumption by 50-60% at the same time. Swany America claims this could "light the way" for clothing recycling in general.

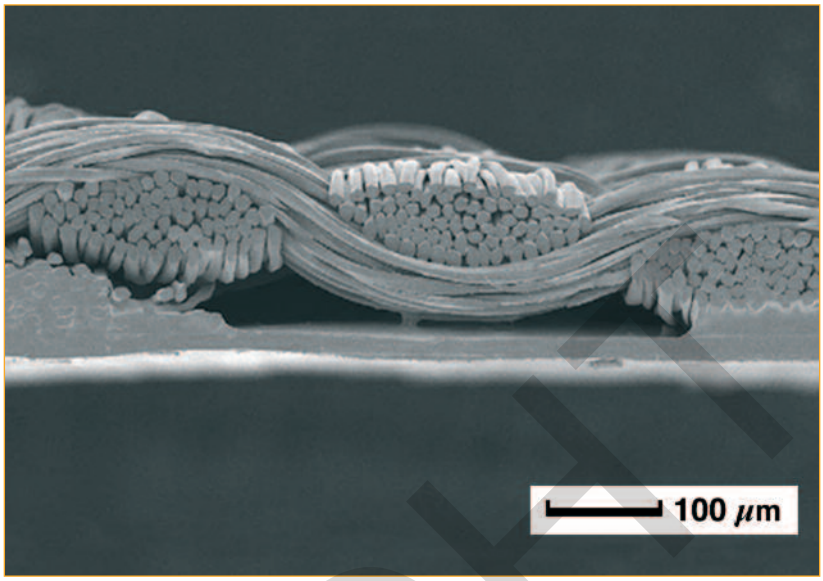
How the project works

Swany will use Teijin's Eco Storm, a recyclable, waterproof and breathable material made from recycled fibres and laminated with a highly durable thin polyester film, to make its new Eco-X glove, which will be available in the company's 2009–2010 winter line-up. The Eco-X glove—said to be the world's first recyclable ski glove—will be available in the US, Canada and Europe from September. It will be made at one of Swany's five factories in China.

According to a spokesperson for Teijin, Eco Storm "can be used as an alternative to conventional waterproof breathable material made with urethane film (for jackets, for example)". It is designed to offer comfortable and durable protection in any weather conditions. With hydrostatic resistance of 20,000mm H_2O and moisture permeability of 15,000g/m^2 in a 24-hour period, Eco Storm can be used for sportswear, outdoor gear and uniforms.

A statement from Swany points out that: "There is nothing new about this concept of using recycled materials; but from there it gets very interesting." As part of the two firms' collaboration, Eco-X gloves will be recycled using Teijin's innovative recycling system, Eco Circle. "As it is made of polyester, not urethane, Eco Storm can be recycled with Teijin's Eco Circle, the world's first closed-loop recycling system for polyester products," says the Teijin spokesperson.

A self-addressed envelope (recyclable of course) will be supplied with each pair of gloves so that, once they are worn out, the gloves can be shipped back to Swany without any cost to the consumer. The gloves' polyurethane palms will be cut off at Swany's warehouse in Johnston, New York, and recycled domestically. The remaining polyester parts, such as the shells, insulation, waterproof and breathable inserts and hollow core inner linings, will be sent to Teijin Fibers' Matsuyama plant in Ehime Prefecture, Japan, where they will be chemically decomposed and converted into new polyester raw material.



The Eco-X glove uses Teijin's Eco Storm material, which is recyclable, waterproof and breathable.

Teijin

When Teijin receives the shipment from Swany, the first step is to launder the gloves before grinding the entire glove up into small pieces. According to Swany, this was the most difficult part of the project as all materials used in the glove must be molecularly compatible in order to be processed. Once the glove is ground into fine pieces it is turned back into liquid form. It is then cooled and formed into pellets, which can be stored indefinitely.

When they are needed, the pellets are heated once again and made into a liquid which is then spun into a filament creating the yarn to make the recycled fabric. Swany points out that the "beauty" of this process is that it is a closed-loop cycle which eliminates waste, reduces energy consumption and greatly reduces CO_2 emissions. The company claims that producing the custom fabric through the recycling process requires 84% less energy than producing it from the original petrochemical base. It also says that, compared with making new polyester from petroleum, the Eco Circle system cuts CO_2 emissions by 77%.

The spokesperson for Tejin backs this up. She says of the Eco Circle system: "It employs the world's first technology for chemical recycling, which chemically decomposes polyester for conversion into new polyester raw materials that offer purity comparable to those

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New option for keeping out the cold and wet

Nextec Srl, the Italian company behind laminated waterproofing technology OutDry, has joined forces with US outdoor clothing brand Mountain Hardwear to create new glove styles for autumn 2009.

OutDry uses a three-dimensional laminating process to laminate a waterproof, windproof, and breathable membrane to the inside of the outermost layer of shoes, boots and gloves. The technology permanently bonds to the shoe or glove creating advanced fit with no folds, seams or seam-sealing tape. The company claims that its system creates a more waterproof finished product, reduces "wet weight" and improves comfort and dexterity. OutDry uses recyclable, non-toxic materials and is PTFE-free.

Mountain Hardwear product manager, Dan Ramos, said on announcing the deal that he and his team had been "so impressed with the superior performance" of the OutDry lamination process that they have chosen to incorporate the technology into all three of their glove categories: Alpine, Backcountry and Snowwear.

For his part, Matteo Morlacchi, Nextec's research and development director, says the gloves market, on top of the success OutDry has enjoyed so far in the footwear field, is becoming an interesting one for his company. "We are receiving great support from Mountain Hardwear," he says, "and we're grateful for it, but I truly believe that OutDry is great for gloves. You feel the difference, not just because your hand remains dry, but also because there is a big difference in weight."

He insists that laminating a waterproof coating onto gloves and then sealing the seams with tape is "almost impossible" with gloves because there are so many curves around fist and fingers. "Any time you have sealing by tape you have issues, because it has to be done by hand," Mr Morlacchi continues. "OutDry means there is no tape—the machine does it all." When brands choose to use OutDry, Nextec supplies all the technology required to their manufacturing partners. It then aims to provide all the support and assistance necessary.

Matteo Morlacchi points out that these manufacturing partners can be companies of any size; the technology works fine in smaller production set-ups too. "I think we're manufacturer-friendly," he adds. "There are fewer steps and less human involvement, so even factories that are not huge and don't have strict control can work use OutDry successfully."



Gloves from the latest Mountain Hardwear range, incorporating OutDry to keep gloves light and hands warm and dry.

Mountain Hardwear

Of the brands, Mountain Hardwear is the first to go public, but he says there is a lot of interest from other North American and European big names in bringing gloves with OutDry to the market next winter.

Even in a tight economy, brands, retailers and consumers are keen on genuine innovation, he argues. Winter sports enthusiasts may feel they can make a saving if last season's gloves are still useable and the shops only have similar styles with similar capabilities on offer. Present them with something genuinely new and they will invest.

derived from petroleum." She adds that it: "Reduces energy consumption and carbon dioxide emissions by approximately 80% each, compared to developing polyester materials from petroleum."

Onus on the consumer

While Teijin and Swany have developed a scheme that could help reduce the environmental impact of producing the high-tech gloves, it will only work if consumers play their part. The Teijin spokesperson is confident that they will, claiming that the two companies are expecting 80% of the used products to be returned as "customers' environmental awareness is quite high".

Swany America's senior vice president, Bill Dzierson, is of a similar opinion. "I believe all of us think we must start somewhere if future generations are to have a suitable habitat in which to live," he says. "A glove is a small article but a start for our industry; tens of millions of gloves are produced each year." The company urges consumers not to throw their used Eco-X gloves away as there is no limit to the number of times they can be recycled. Perhaps this model will be taken up by other sporting goods manufacturers and consumers will become so accustomed to recycling worn out items that "throw-away" apparel and accessories will almost become a thing of the past.

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