

Athletic brands spin a new yarn

At a United Nations-hosted conference, adidas made a bold claim. All polyester the German sportswear brand uses from now on will be made from recycled plastic, taken from the oceans. The company's head of global brands, Eric Leidtke, said this equates to 260 million t-shirts per year. "Not only will we be taking 260 million t-shirts out of the oceans, we would not be creating 260 million t-shirts-worth of new polyester every year," he says.

As part of a new tie-up with environmental campaign group Parley for the Oceans, it launched a concept shoe at the event in New York made entirely from yarns and filaments recycled from nets that partner organisation Sea Shepherd retrieved after a 110-day expedition tracking an illegal poaching vessel off the coast of West Africa.

The ambitious idea appears to be an extension of a partnership with music producer and singer Pharrell Williams, and a textile company he has invested in, US-based Return Textiles, which makes Bionic Yarn. Last summer the singer

Adidas is launching a collection made from recycled from ocean waste, while Keen's Uneek design uses 75% new manufacturing methods.

launched his first collection of T-shirts, jackets and caps for adidas made with Bionic yarn, after signing a multi-year contract with the brand. "From the classic track suit, to growing up in Virginia wearing Stan Smiths, adidas has been a staple in my life," said Mr Williams at the time. "This is an exciting partnership for both me and for Bionic Yarn."

But from a limited-edition range of t-shirts is quite a leap from to 260 million, and there will be questions over how adidas will pull this off. Return Textiles was established in 2008 to focus on repurposing plastic bottles – broken down, the polymer is the same (polyethylene terephthalate), so it

Adidas' recycled plastic concept shoe, billed as 'from the sea to the street'.

CREDIT: ADIDAS



can be restructured into a weavable yarn. The 'Bionic' yarn is made with up to 46% recycled material blended with cotton, wool or other fibres. Moncler and Gap were early adopters, and after agreeing to the fabric quality, Timberland created displays in stores to show how it was made.

Return Textiles co-founder Tyson Toussant explained they were approached by environmental campaign group Parley for the Oceans. "It never crossed my mind to think of recycled plastic from oceans, I saw it as a land problem," he admits. "I usually get the recycled fibre from where I manufacture, because I don't want to increase the carbon footprint by shipping plastic bottles from New York to Asia."

The plastic collected from the beaches is difficult to repurpose, adds Return's other founder, Tim Coombs. "But we were inspired to change our company and take on the challenge. Our production staff and our engineers finally commercialised a yarn made from the oceans; we are proud to be part of the solution."

John Warner, an industrial chemist and speaker at the Parley event, thinks one of the reasons for the proliferation of plastic in the seas is that chemists are not taught about toxicity or environmental impacts at university or when they move into industry. "Have you ever asked yourself why there are red dyes that cause cancer, that there are plasticisers that cause birth defects, that there are monomers that are endocrine

Music producer Pharrell Williams invested in Return Textiles to produce his own line of sustainable adidas merchandise.

CREDIT: ADIDAS



Plastic by numbers

500bn:	Plastic bags thrown each year
21,000:	Pieces of plastic per km ² ocean
600 years:	Time for nets to degrade
8m tonnes:	Plastic entering ocean in 2010
9.1m tonnes:	Plastic entering ocean in 2015 (est)
155m tonnes:	Plastic entering ocean in 2025 (est)

Source: Zoological Society of London/Science magazine

destructors, or that there are plastics that live eternal lives and cause havoc in the oceans?" he asks. His view is that the way science has evolved, chemistry has remained outside of the environmental discussion, something which "has to change now". "Scientists documenting all the problems now are writing the text books for the next generation of chemists to help them understand at the molecular level what is going on, and so when they make the next material, they also know how not to do it," he says.

Adidas' concept shoe was billed as 'from the sea to the street' and a commercially available range is promised later this year, as well as an extended apparel collection using Bionic Yarn. "This is a collective issue," says Mr Liedtke. "The key is collaboration – environmentalists, industrialists, scientists and filmmakers. Adidas knows how to make the products but we need everyone's help in collecting plastics and finding plastic alternatives. Working together is the only way to solve big problems."

Cord construction

Another brand looking into new types of construction is US outdoor brand Keen, which has launched a series it calls Uneek. The result of three years of research and development, Keen says it offers extra comfort because it moulds to the foot.

"The idea started from a few people questioning just how and why we made shoes the way we did and how we could do it differently, and of course we looked at the foot and end use, with the main goal of increasing comfort," Uneek's creator, Rory Fuerst, tells us.

"If you look at shoe production, it tends to use a lot of flat goods cut into small pieces and put back together to conform to a very complex and dynamic 3-D shape, the foot. We just said, let's start with small pieces of cord, conform them to a 3-D shape and see what happens. The other side of it was not adding too much reinforcement or additional structure as

this would take away from the gains made in material and assembly changes. The result was what testers described as 'feels like I have nothing on'. We took this as a good sign, and then it was just a matter of taking those prototypes that we had made at our desk by hand and trying to replicate that feeling over and over again thousands of times."

The brand has this year expanded its team of designers and developers to focus on new product, and hired a design director from Merrell, a development director from Wolverine and a vice-president of product from Ecco.

For Uneek, it worked with existing suppliers to develop the materials and processes and says the key to success was not the supplier's history in traditional manufacturing, but its willingness to try something new.

"Around 75% of Uneek uses new methods," explains Mr Fuerst. "We still use traditional sewing machines for the small micro-fibre pieces and use a traditional stock fitting line for attaching the rubber sole to the PU midsole, but most of the upper and upper-to-sole attaching uses completely new methods."

The process involves a combination of hand work with a progressive positioning system that allows the shoe to be built using no permanent fixing methods that could affect the fit of the final product.

"The most challenging part of the process is controlling cord tension and length, transitioning of the components from one process to the next, and a standardisation of the hand-making process. The system was designed to address these issues and is the only way to mass produce these open-air shoes."

The design was praised as "a superb solution for travelling, outdoor activities and everyday use" by judges at the recent OutDoor Friedrichshafen show in Germany, where it won a gold award. The updated version for spring/summer 2016 features an 8mm flat cord which allows for more colour combinations and reportedly improves comfort.

"The key was not taking the 'easy outs' that would have made it easier to make but would have affected the fit and experience of the final product," adds Mr Fuerst. "When trying something new or trying to change the way you do things, it's all those little yesses or nos that at the time seem trivial and make things comfortable or easier, but when you add these up you find yourself doing it the same old way. We were unbelievably stubborn when it came to making these seemingly small and easy changes, and sticking to our vision. I think that is why Uneek ended up the way it did." 🌀



Keen's Uneek shoes are constructed from cords of recycled plastic. CREDIT: KEEN

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