

WIRED

Arch&Hook

**Can the fashion
industry kick its
plastic addiction?**



Fashion's plastic problem

The fashion industry has an addiction to plastic – and it's casting a long shadow on the health of our planet. Each year, the industry uses 342 million barrels of petroleum to produce plastic-based fibres such as polyester, nylon or acrylic. This equates to 1.35 per cent of the globe's oil consumption.

Worse still, these plastic-based fibres are responsible for 73 per cent of [microfibre pollution](#) in Arctic waters and, according to the Ellen MacArthur Foundation, the plastic packaging on which the fashion industry is largely reliant, is estimated to make up [26 per cent](#) of the total volume of plastics created each year – 72 per cent of which is thrown away. However you choose to measure its impact, the numbers are staggering.

Even more worrying is that fashion brands are now producing almost [twice the volume](#) of clothing they produced in 2000, with most of that growth coming from clothes made using plastic-based fibres. Only a tiny proportion of these fabrics are ever recycled, with the vast majority of our clothing ending up in landfill or being shipped to countries in the developing world. It's clear that as the amount of clothing being produced each year increases, so too does the size of the fashion industry's plastic problem and plastic waste. "The current fashion system is broken. We use resources to make products that are used very little and then ultimately thrown away," says Juliet Lennon, a programme manager at the Ellen MacArthur Foundation's Make Fashion Circular initiative. "We're going to need to fundamentally transform the way that products are designed, made and used. And for that, we need a circular economy."

But fashion's plastic habit runs much deeper, with textiles being just the tip of the iceberg. A complete transformation of the fashion retail industry will mean going well beyond the clothes themselves and reaching the parts of the retail industry that consumers are seldom presented with. Behind each item of clothing is a hidden world of plastic waste that most people are completely unaware of. Take hangers as one example. The sustainable materials brand [Arch & Hook](#) estimates that 128 billion plastic hangers are used worldwide on an annual basis, the majority of which end up in landfill. The boom in online sales over the pandemic means that more clothes, fashion-related products and accessories, along with their accompanying single-use packaging, are being transported globally, exacerbating the problem even further. On top of this, retail stores themselves have become shrines to the convenience of virgin plastic – often crammed with plastic display cases, shelving, packaging and furniture that has been designed to be thrown away rather than reused.



Consumers will be watching closely to make sure that businesses deliver on their promises of reform. At stake is not only the future of the planet, but the reputation of an industry that is increasingly seen as synonymous with waste and environmental damage. In a WIRED survey, 55 per cent of respondents based in the UK said that the fashion industry has a negative impact on the environment, while 82 per cent said that they think it is important that the fashion industry finds alternatives to plastic in order to reduce its environmental impact. Brands that can sidestep this reputation for wastefulness may well endear themselves to a new generation of conscientious shoppers who are cynical of greenwashing and eager to support brands with robust environmental credentials. In the same WIRED survey, approximately 60 per cent of respondents in the UK and the US said that they actively chose to shop at fashion brands that have a less harmful impact on the environment.

"The consumer wants to know what's behind the garment," says Patsy Perry, a reader in fashion marketing at the Manchester Metropolitan University's Fashion Institute and co-author of a recent paper setting out fashion's environmental impact in the journal *Nature Reviews Earth & Environment*. But "going behind the garment" will require developing a whole new approach to the way that retailers design their stores and supply chains, starting with the raw materials themselves.

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The price of sustainability

There are signs that the fashion industry is waking up to the fact that sustainability is a necessity, not an added extra. In 2018, the United Nations launched the [Fashion Industry Charter for Climate Action](#), which set the industry the target of hitting net zero greenhouse gas emissions no later than 2050 and a 30 per cent reduction in emissions by 2030. After COP26 in 2021, this target was updated with brands agreeing to halve greenhouse gas emissions by 2030. Charter signatories also committed to embracing circular business models and prioritising materials with low climate impacts. Since its launch, 130 companies and 41 supporting organisations have signed up to the Charter, with prominent supporters including Chanel, H&M and Nike.

As more brands make sustainability their default mode of doing business, they'll have a series of difficult decisions to make. Nearly two thirds of US- and UK-based respondents to a WIRED survey said that they'd be willing to pay more for fashion brands that are less harmful to the environment, but only a small handful of fashion retailers currently place sustainability front-and-centre as a core part of their brand. This shift in mindset and search for alternative materials to plastic needs to extend beyond textile production. What is all too often overlooked, and must not be, is "behind the scenes" plastic consumption by the industry across the supply chain – including how products are distributed, delivered and ultimately displayed in store. Most retailers will need to find a way of incorporating alternative sustainable materials and business practices, both seen and unseen, without eroding the authenticity of their brand.

But even if brands can agree on the definition of sustainable materials, there remains an even more significant hurdle to overcome: pricing. "I think that the main problem is really price," says Perry. "There's a huge pressure to reduce prices and get costs down. All that gets pushed onto the manufacturers and corners get cut." For decades, the cost of fast fashion hasn't priced in the negative externalities that run through the industry, from environmental damage to questionable labour practises. At the moment, sustainable materials are widely perceived as more expensive than virgin plastic, but this is a misconception.



A large, conical pile of multi-colored plastic waste, including fragments of bottles, containers, and packaging, sits on a concrete floor in an industrial recycling facility. In the background, a conveyor belt system is visible, with a stream of similar waste being processed. The scene is dimly lit, with overhead industrial lights providing the main illumination.

2 out of 3
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The price comparison between the two doesn't factor in the true cost of virgin plastics, where the cost of emissions, pollution and collection is all shifted away from the product itself: someone else usually picks up the bill for these negative externalities. Products that can last longer and be reused have more long-term value than the short-term convenience of disposable plastics. A report from McKinsey and the Ellen MacArthur Foundation found that 95 per cent of the value of plastic packaging material was lost to the economy after its first use: that's equivalent to between **\$80 and \$120 billion** annually. The cost of negative externalities such as greenhouse gas emissions adds up to another \$40 billion. The use of virgin plastics, it turns out, is not as cheap as it might first seem.

Arch & Hook's global general manager for sustainable fixtures and furniture, Cris Pizzato, wants to close the gap between virgin and recycled plastic by bringing down the cost of reusing plastic. If manufacturers switch to materials that are fully recyclable, then those materials become a valuable resource when it's time for a store to be redesigned or refreshed. The difference in cost between Arch & Hook's recycled materials and virgin plastic is also getting smaller, Pizzato says, and if retailers find ways to reuse their existing materials, they can make costs even lower. "Creativity can solve this compromise," she says. "I really hope that by giving people more knowledge of what they currently have in their retail space, we'll even spark better and newer ideas."

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The way forward for fashion and retail

For Pizzato, creativity starts with raw materials. When she walks into a store, her eyes aren't drawn to the items on sale. Instead, she finds herself mentally deconstructing the very materials that make up the store itself. Is that display stand easy to recycle, or are its wooden surfaces held together with metal screws and glue that might make deconstruction more difficult or even impossible? Could the flooring underfoot have a second life as a service desk, or would it be better suited to becoming seating? A large part of Pizzato's job is about being creative with the materials that retailers have at hand. "When I see a building coming down I'm like, 'wait a minute, if we're careful enough we can salvage that concrete'," she says. One shoe retailer that Pizzato worked with was looking for a way to reuse shoes that had been returned to stores and could no longer be sold. Arch & Hook found a way to grind the upper soles of old shoes and combine that material with polyethylene powder to create a material that could be used to make new in-store seating – a great example of the circular economy in action.

Arch & Hook's experimentation with sustainable materials dates back to 2016, when the company started exploring a way to turn ocean-bound and post-consumer plastics into new products. During London Fashion Week in September 2019, the company launched BLUE®: a fully-recyclable hanger made from 100 per cent recycled plastics predominantly sourced from four of the most polluting rivers in the world. For Sjoerd Fauser, Arch & Hook's CEO and founder, it was an opportunity to show that closed-loop materials don't need to come with any compromises. "People don't realise that recycled materials can be of much higher quality than their virgin plastic counterparts," he says. "And that they can impact every single part of a supply chain, reducing overall emissions. It's about education – once you know what's available and the opportunities it brings for innovation and creativity, people are willing to roll their sleeves up and be part of the





solution.” Now, the company is moving beyond hangers to make sustainable materials that can be turned into in-store furniture and fixtures, as well as packaging boxes made out of the same BLUE® plastic in the brand’s hangers. “We collect post-consumer and post-industrial plastic waste via bluebins and put it through a process of technological recycling, including extrusion and granulation, before transforming it into high-quality recycled pellets that can be manufactured into anything,” Fauser explains. “We design for the future – and work with companies that realise that’s the only option, both ethically and economically.”

“There’s so much opportunity nowadays for us to move the needle, change the mindset and bring in new alternatives,” says Pizzato. Part of the trick here is making sure that materials are designed from the very beginning with their second life already in mind. Where possible, Arch & Hook’s products are constructed without using glue or bolts, making them easy to put together and take apart for recycling at the end of their life. “Arch & Hook creates materials of the future and for the future,” says Fauser. As well as recycled plastic, the company is also experimenting with other sustainable materials: bamboo, cork and seaweed. “Of course, it’s easier to turn your back on the hard stuff and hope for the best – especially when the focus is always on the more ‘visible’ aspects of sustainability within these industries,” says Fauser. “But that short-term thinking will have devastating consequences for both the planet and businesses.”

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Sjoerd Fauser, CEO and founder, Arch & Hook



Sustainability needs to be more than an afterthought for brands. It needs to be at the very core of who they are and what they do. Achieving the goal of reducing environmental impact will require all retailers to think creatively and look for solutions across the value chain, including how products are displayed in stores.

As M.A.C Cosmetic's global president, Philippe Pinatel, explains, "brand values, including commitment to environmental sustainability, are no longer 'nice-to-haves', but are must-haves, and we all need to do our part." M.A.C sees its stores and counters as opportunities to not just reduce environmental impact, but as places to educate consumers on its efforts and invite them to join M.A.C on its sustainability journey. One area of focus for the brand is around its packaging. "Due to their size and multi-part or multi-material nature, cosmetics packaging is not widely accepted at recycling facilities around the world. Through our Back-To-M.A.C programme, we invite consumers to bring their empty products back to us for collection in our prominent green 'takeback' bins, located at participating M.A.C locations. We recycle what we can, and what cannot be recycled is converted to energy" explains Pinatel.

The importance of putting sustainability at the core of the business is emphasised by Noel Kinder, chief sustainability officer at Nike, in a recent statement. According to Kinder, "if you want a more sustainable business, you have to integrate sustainability into every aspect of operations. Everybody has a role to play, and you must give people tangible, specific, measurable goals to strive for." Nike views sustainability as a key performance indicator alongside cost per unit, delivery precision and quality – it is something that is central to its purpose as a company. "It isn't just what we do or what we believe; it's who we are." says Kinder. In 2021, Nike saw an opportunity with its new concept store in Toronto, to move away from display stands made out of virgin plastic or steel and seek out more sustainable alternatives. By partnering with Arch & Hook, these fixtures were instead made out of recycled post-consumer waste which featured an attractive speckled terrazzo-style design. As these new fixtures could be easily flat-packed, the emissions during transport were also reduced.

Making sustainability the new normal

Many fashion and retail brands are raising their voice around sustainable practices and expressing a passion for the green agenda, yet their green credentials lag behind the rhetoric. To authentically deliver on their promises, they will need to find new partners who can help them to develop more sustainable practices. Brands such as Arch & Hook are now enabling a broad range of retail partners to come good on their sustainability messaging and deliver meaningful change. "What drives us is trying to answer questions yet to be asked – finding solutions to the problems that we can see and those that we can anticipate," explains Fauser. "That's what led to us becoming a materials engineering company – anticipating the global need for sustainable solutions at scale. That need is now and it's urgent."

Finding more sustainable materials is only one of the challenges facing the industry's transition to more sustainable ways of working. "It's still fundamentally using so many resources in different ways, and producing so much waste at the end," says Josie Warden, head of regenerative design at the RSA. "If you have ambitions to use entirely recycled [materials], that infrastructure isn't really there at the moment."

However, there is hope. For some industries, the last decade has been one of wholesale transformation unimaginable before the turn of the century. At the beginning of the new millennium, it seemed that the combustion engine would be with us forever, and that coal would remain a central part of our energy systems. Hopefully, both of those technologies will soon be consigned to history. The fashion industry is just getting started with its own transformation – one that will upend business models, supply chains and methods of production. The upheaval will be seismic; undoing more than half a century of dependence on fossil fuel-derived virgin plastics. But the opportunity that material innovation presents is huge: an era of smarter, recyclable and reused materials that can build a more sustainable world.



About Arch & Hook

Arch & Hook (A&H) is a sustainable materials engineering company, developing recycled and recyclable alternatives to non-sustainable materials within the fashion and retail industries.

Founded in Amsterdam in 2015, A&H started out as the world's first sustainable hanger brand, pioneering game-changing innovation across the fashion and retail sectors. The company is now building on that legacy, driving industry collaboration with its innovative and fully recyclable materials, such as BLUE® and A&H WOOD.

Arch & Hook – Sustainable Engineered Innovations.

Discover more at archandhook.com

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