

LUXURY MEMO SPECIAL REPORTS

Alternative materials Luxury Memo special report

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Bolt Threads is launching Mylo, a faux leather. Image courtesy of Bolt Threads

By SARAH JONES

Luxury has traditionally been associated with specific naturally derived materials such as leather and diamonds, but technology and changing attitudes are paving the way for manmade alternatives.

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From leather cultivated out of mushrooms to diamonds grown in a lab, brands and consumers are experimenting with new materials. As luxury labels branch out, there are ongoing debates about the comparative sustainability and impact of manmade materials, as well as whether they truly reflect the idea of luxury.

"There has been a growing acceptance of manmade materials as we as consumers are more aware about the cruelty on animals," said Ashok Som, professor of global strategy and chair of the management department at the [ESSEC Business School](#), Paris. "Having said that, man and animal have been together since the beginning of time.

"My understanding is that the use of manmade materials is a trend towards using cutting edge technology and innovation in science to build superior materials," he said. "This has been taken up by activists, NGOs and brands, which want to ride this wave of the trend.

"They assign this trend to millennials who are much more aware and conscious than the older generation in these spheres due to their proficiency in the use of Internet, social media and communities."

Top 5 trends in alternative materials

- Sustainability

One of the key reasons why brands have embraced manmade alternatives is to be more eco-conscious. However, some cultivated materials face an ensuing debate over whether they are actually greener than the version found in nature.

- Animal rights

Amid growing pressure from animal rights groups, a number of luxury brands have eschewed real fur. There is also a growing momentum for leather alternatives to protect livestock.

- Affordability

Often manmade alternatives offer consumers lower prices, enabling luxury brands to create entry-level options for aspirational buyers.

- Quality control

While there are imperfections that naturally occur in nature, manmade materials can be standardized. Some materials also tout the ability to play with properties to fulfill design needs.

- Sticking to tradition

Some luxury brands are bridging traditional and invented materials, while others are keeping to natural options.

Leather

For a long time, leather and skins were associated with luxury. But even leather goods houses with decades of history are seeing the potential for a future without animal skins.

Sustainability is so profoundly consequential in luxury manufacturing today that leather in the future will likely be completely synthesized, according to the former CEO of Bottega Veneta.

During a conversation with International *Vogue* editor Suzy Menkes at the Cond Nast International Luxury Conference in 2018, Claus-Dietrich Lahrs shocked attendees when he stated that he believed in the far future, leather will no longer come from actual animals, in a more humane form of fashion ([see story](#)).

Newer entrants have also laid the groundwork for more acceptance of leather alternatives.

British fashion label Stella McCartney was an early mover in changing the narrative, seeking to prove that faux leather could be as luxurious as the real deal when it launched in 2001. The brand's cruelty-free handbags and accessories feature luxury price points and a made in Italy positioning but are crafted in materials such as polyester.

Cattle rearing uses significant land and creates greenhouse gasses. Stella McCartney's EP&L calculates that raising cattle in Brazil has 17 times the amount of environmental impact than polyester.

Stella McCartney has been using alter-nappa as a leather substitute since 2013, which is made of polyester and polyurethane, reducing the use of petroleum.

[View this post on Instagram](#)

The @StellaMenswear Alter-Nappa tote bag, stamped with our iconic circular logo. #StellaMenswear

A post shared by Stella McCartney (@stellamccartney) on Jun 4, 2019 at 7:01am PDT

Instagram post from Stella McCartney

Vegetarian leathers still do have an environmental impact, which primarily comes from processing oils into materials.

Some producers are finding ways to mimic the properties of skins through biological methods.

As the fashion industry looks to lower its environmental footprint, biotechnology company Bolt Threads is launching a more sustainably produced faux leather, which uses the root structure of mushrooms, or mycelium. Dubbed Mylo, the production of the fabric begins as Bolt Threads takes mycelium cells and grows them in corn stalks, which then turn into a network of 3D cells.

From there, the cells are compressed, imprinted and dyed. As Mylo is created, Bolt Threads can control all aspects of its production, altering it for characteristics such as durability or suppleness.

Presented as an alternative to faux leathers that looks and feels more like the real thing, Mylo is also more eco-friendly than polyurethane or PVC pleathers.

Stella McCartney was the first designer to use Mylo, leveraging the faux leather for a handbag that was on view during the Victoria and Albert Museum's "Fashioned from Nature" exhibit in 2018 ([see story](#)).

New Jersey-based Modern Meadow is similarly exploring biofabrication. Using collagen and yeast, the company is creating materials from the cellular level up.

This process enables the fabrics to be created with a specific purpose or property in mind, growing textiles that would not be found in nature. Modern Meadow stresses the design possibilities of starting from scratch.

Modern Meadow is using biofabrication to build leather alternatives

Beyond fashion, leather alternatives are gaining ground for other applications.

Alcantara is a composite material that was first developed in the 1970s. The technology-driven textile has found an audience in luxury automakers and yacht manufacturers, who use the material for upholstery and other interior touches.

Furniture labels including Ligne Roset and fashion brands such as Swarovski have also chosen Alcantara for projects.

The company touts the textile's carbon-neutral production as a selling point.

"We think there is a growing market trend where people look to replace natural leather because it is not considered an ethical product, also because of an increasing ethical vision of business and respect for the environment," said Andrea Boragno, chairman and CEO of [Alcantara](#), Milan.

"We see clear evidence from the market that there is a strong tendency towards a contemporary lifestyle that is reflected on an increasingly limited use of leather," he said. "Many design-oriented brands tend to greatly reinforce this trend.

"Natural leather is our main competitor in terms of price point, but we are totally different. Alcantara is a unique material with a unique market positioning featured by an extreme contemporary lifestyle, which represents a great differentiation from leather."

Alcantara's properties also allow for a range of customization, from color palette to embossing, enabling clients to get a bespoke look.



Ferrari's F8 Tributo uses Alcantara. Image courtesy of Alcantara

Beyond leather derived from livestock, brands are facing growing pressure from activist groups such as PETA and consumers to drop the use of exotic skins.

In December, Chanel announced that it would no longer be making goods with skins from animals such as snakes and crocodiles. Selfridges is similarly phasing out the sale of products made with these skins ([see story](#)).

At the same time, many labels and companies are continuing to use natural materials, while focusing on making their sourcing more sustainable and transparent.

For instance, French luxury conglomerate Kering is looking to help its own companies and its peers improve their animal welfare through the release of open-source standards.

Kering's guide covers all of the species that are included throughout its supply chain, such as cattle, sheep and goats. In recent years, there has been a growing consumer focus on the treatment of animals within fashion production, and Kering's standards are aiming to provide more transparency about its own practices ([see story](#)).

The group also conducted a study in 2016 on the ecological impact of python sourcing. Kering and its research collaborators within the Python Conservation Partnership found that wild harvesting and farming of pythons is ecologically sustainable and economically beneficial to local communities ([see story](#)).

Similarly, LVMH Mot Hennessy Louis Vuitton recently introduced new requirements for its crocodilian leather sourcing, as the group continues its quest to be more transparent about animal welfare and other sustainability issues.

LVMH plans to have all the farms supplying its exotic leather tannery certified by its new standards by 2020. Affluents are expecting more transparency and public initiatives from luxury brands as they grow more aware of environmental issues ([see story](#)).

According to a report from European leather trade organization Cotance, 99 percent of the leather produced by tanneries in the E.U. comes from animals who were raised for a purpose such as milk or meat, negating the environmental impact of the animals during their lifespan.

Tanneries are also doing work to reduce their water usage and clean their water waste, reducing some of the other impacts of production.

Fur and feathers

Similarly to leather, animal rights activism has pushed luxury labels to eschew animal fur, leading to a growing movement of brands switching to faux alternatives.

In May, Italian fashion group Prada became the latest brand to commit to a fur-free pledge in collaboration with the Fur Free Alliance.

The women's 2020 spring and summer collections will start under the fur-free pledge, with existing fur inventory available until it is all sold. The group explains that its move is meant to coincide with its socially conscious

ideology and will push its labels to be more creative in their designs ([see story](#)).

Armani, Gucci, Furla, Versace and Diane Von Furstenberg are among the other brands that are no longer using fur.

According to Furla, the technical advances in faux fur have rendered the use of real fur unnecessary ([see story](#)).

Reflecting the growing demand for faux fur, one label launched entirely centered on the material.

New York-based label Maison Atia is giving faux fur a more craftsmanship-driven makeover by turning to ateliers who traditionally have worked with luxury brands to create real fur fashions.



Maison Atia specializes in faux fur. Image courtesy of Maison Atia

Chloe Mendel and Gustave Maisonrouge founded [Maison Atia](#) in 2017 to cater to the growing demand for cruelty-free fur, as consumers heightened their appeal to brands to drop the use of animal-derived products. The label, which has previously focused more on see-now, buy-now collections, held its first solo presentation during New York Fashion Week on Feb. 13 for its 70s-inspired fall/winter 2019 collection ([see story](#)).

As with mass-produced faux leather, there is an ongoing debate around which type of fur is actually more sustainable.

Faux fur is typically made with plastics such as acrylic or polyester. Compared to animal skins, which naturally biodegrade, faux furs cannot be broken down by bacteria since they are synthetic.

According to the North American Fur Industry Communications group, natural fur has the benefit of being a renewable resource compared to petroleum-based faux fur. The organization also touts real fur's ability to provide jobs to people in rural locations, as well as fur trappers' work in conservation, since these individuals are often the ones who notice changes in a wild population.

As the luxury fashion industry's banning of fur grows, The International Fur Federation is determined to keep its business alive with a documentary said to dispel myths.

The federation has hired a team of lawyers and media consultants to look into how the anti-fur movement has grown. The organization believes a video from 2009 revealing a raccoon being skinned alive for its fur is the source of the movement's momentum ([see story](#)).

Down is also seeing pushback from animal rights organizations. Some brands have doubled down on making sure their down production is ethical.

Italian outerwear label Moncler performed an audit on its suppliers in the wake of criticism of its down production.

In 2014, an Italian documentary show claimed to expose mistreatment of geese at a plant in Hungary that provides down for the brand's jackets. While Moncler denied any wrongdoing, [Reuters](#) reported that Moncler launched an external review of its providers to ensure its supply chain is clean ([see story](#)).

As an alternative to feathers, some companies have mimicked the heating properties of down without geese.

For instance, Save The Duck's Plumtech is made with recycled plastic.

"The global textiles and clothing industry is responsible for unprecedented consumption of water, CO2 emissions and waste," said Nicolas Bargi, founder/CEO of [Save The Duck](#), Milan. "It's no secret this is having a huge impact on

our ecosystem, and that includes animals.

"At Save The Duck our goal is to live in an animal cruelty-free world, that led us to reject the use of any material of animal origin from feathers to leather, fur, wool all the way to mother of pearl," he said. "We replaced goose down with a state-of-the-art technology Plumtech as it is warmer, more breathable and lighter than down. I believe this is what makes our product offer unique.

"People are sensitive to environmental issues and sustainable living, that includes animal sacrifice. I trust consumer demand towards a more ethical product is the only answer to the needs of a new generation. To us, luxury is a matter of quality of life, technology and connection to the beauty of nature. We are a clash of sport-inspired and eco-activist attitude."

[View this post on Instagram](#)

Learning to respect Nature with #SaveTheDuck . . . #greenfashion #savetheduckers #newseason #wecare
#loveanimals #respectnature #green #thinkgreen #style #recycle #nature #colour #fashion #sustainability
#sustainablefashion #collection #jacket #colour #vegan

A post shared by Save The Duck (@save_the_duck) on Jun 29, 2019 at 3:00am PDT

Instagram post from Save The Duck

PrimaLoft, which originated for the U.S. Army, creates tiny fibers that trap body heat. The company has expanded into consumer-facing products, and its fibers have been used by companies including The North Face and Adidas. Fixing the problem of biodegradability, PrimaLoft recently launched new fibers that are made of recycled materials

that will break down over time.

Sustainable clothing collective Pangaia has developed a down alternative using dried wildflowers.

Textiles

Manmade fabrics are gaining interest as companies seek to be more sustainable.

Viscose, a fabric made from wood pulp, is touted as a sustainable alternative to polyester or cotton. The textile is growing in popularity, and is used for everything from fashion to bedding.

While the semi-natural fiber is not theoretically as polluting as other fabrics, the production has led to deforestation.

Looking to change the environmental impact of fashion, NGO [Canopy](#) is working to reduce and eventually eradicate the use of endangered forests for fabric sourcing.

Canopy, which counts Stella McCartney, Kering and Nordstrom among its partners, is working with producers to innovate the textile. Viscose has been made out of everything from recycled fibers to agricultural residue, giving the material less of an ecological impact.

One of the producers that works with Canopy is Lenzing. The firm has developed a traceable Viscose with the brand name Ecovero, allowing those down the supply chain to have peace of mind. [Lenzing](#) also recently launched Refibra, which is made of recycled post-industrial cotton waste mixed with wood pulp ([see story](#)).

Luxury brands have also been developing textiles out of unconventional materials.

For instance, in 2017 Italian fashion house Salvatore Ferragamo created the first apparel collection created from fabric derived from citrus fruits.

Ferragamo's Orange Fiber Collection is a project rooted in sustainability and innovation. Using Orange Fiber, a patent with "an all-Italian soul," Ferragamo designed a capsule of exclusive prints using the citrus fruit fabric ([see story](#)).

Similarly, German fashion brand Hugo Boss took a unique spin on sustainable fashion design with the launch of footwear created with pineapple leaves.

The products are called Pinatex shoes and they use specially treated pineapple leaves in place of more traditional leathers to create a product that is more sustainable while remaining stylish ([see story](#)).



The Pinatex shoes use far fewer resources than regular leather. Image credit: Hugo Boss

As part of its relationship with Bolt Threads, Stella McCartney has created fashions using the company's spider silk. The textile uses the same proteins that are found in a spider's web, which creates a soft, strong, durable fabric ([see story](#)).

Bolt Threads' Microsilk

Diamonds

For a long time, miners have been growing faux diamonds in laboratories to use as tools for cutting and polishing. In recent years, these lab-grown stones have been given a new purpose, as companies have developed the means to create jewelry-quality diamonds.

Concerns over conflict diamonds and a desire to save money are jointly driving consumer interest in lab-grown

stones.

Mined diamonds are facing increasing competition, as two-thirds of millennials who are shopping for an engagement ring are considering lab-grown stones.

While only 9 percent of consumers knew about lab-grown diamonds in 2010, today more than half of shoppers are aware of these alternatives. According to a report the International Grown Diamond Association commissioned from MVI Marketing, about a quarter of millennials are planning to buy lab-grown stones, looking to get more bang for their buck ([see story](#)).

How lab-grown diamonds are made

Lab-grown diamonds are driving an ongoing debate in the jewelry business, as companies cannot reach a consensus on the positioning and purpose of these synthetic stones.

While some consumers have embraced lab-grown diamonds for celebratory and lifelong pieces such as engagement rings, some designers see them as a material that can only be used for fashion styles ([see story](#)).

Diamond producer De Beers Group recently got into the lab-grown diamond business. Based on consumer research, the company saw a simultaneous demand for and confusion about synthetic stones.

Per the study, consumers also saw mined diamonds as different from lab-grown ones.

De Beers has positioned its lab-grown diamond brand Lightbox differently from its mined diamond brands, including Forevermark, by keeping the styles to fashion jewelry.

Available in white, blue and pink, Lightbox's stones feature a set pricing structure of \$800 per carat, or \$200 for each quarter carat, making them more accessible.



Glittery by association: De Beers' lab-grown diamonds set in earrings and pendants. Image credit: De Beers' Lightbox

Amid the rise of lab-grown diamonds, the FTC has come down on synthetic stone sellers for failing to indicate to consumers that their diamonds did not come out of the ground. The agency sent letters to eight lab-grown diamond labels warning them that they need to include terms such as "laboratory-grown," "laboratory-created" or "synthetic" ahead of diamond in their advertising.

In 2018, the FTC also revised its jewelry guidelines to clarify that the adjective "cultured" could be perceived by consumers as pointing to a naturally created diamond. The agency therefore notes that the term cultured should only be used in conjunction with other indicators, such as laboratory-grown, to avoid any consumer deception.

"A natural diamond is a rare, finite and unique piece of the planet's history, with the youngest diamond being nearly

1 billion years old, and the oldest more than 3 billion years old," said David Johnson, head of strategic communications for [De Beers Group](#), London. "Natural diamonds are inherently precious and have enduring value because of their rarity and uniqueness.

"On the other hand, an LGD is a factory-made product, mass-produced in large batches to uniform specifications in industrial reactors or high pressure presses over a matter of days or weeks," he said. "They have been used for many decades in industrial processes, such as for drilling. Just like any product of technology, their value declines over time as supply increases and production costs reduce.

"This is why standards such as the FTC Jewelry Guides are so important. Natural diamonds and LGDs are both legitimate products, but they are distinct product categories with very different values. People need to be able to make clear and informed choices about what they are buying and the FTC Jewelry Guides help ensure that this is the case."

Along with a debate about the use of synthetic diamonds, both sides argue that they are a more sustainable choice.

As consumers seek out more transparency in the brands they do business with, the Diamond Producers Association is looking to shed light on the positive effects of mining with a research project.

DPA tapped Trucost to conduct an independent study that looks at the socio-economic and environmental impact of diamond production, which is accessible to consumers via a dedicated Instagram account and Web site. The trade organization's Total Clarity Report values DPA's net impact as \$16 billion, an amount that reflects the employment, community and ecological benefits of mining ([see story](#)).

Meanwhile, lab-grown diamond makers consider their stones more sustainable since the creation process does not impact physical land and communities. However, DPA's research found the carbon footprint of synthetic diamonds is higher.

Mined diamond companies are also taking a proactive approach towards sharing the origins of their stones in an effort to appeal to consumers' value-driven decision making.



Tiffany and Co. puts sustainability under a magnifying glass. Image credit: Tiffany & Co.

Jeweler Tiffany & Co. is taking its commitment to sustainable sourcing a step further by disclosing the origins of its newly sourced diamonds to customers.

Tiffany's Diamond Source Initiative will let customers know the country where their stones were mined, with plans to allow consumers to trace the production journey of the diamonds from mine to retail by 2020. While Tiffany has long been committed to conflict-free diamonds, this effort is aimed at providing greater transparency around its practices ([see story](#)).

"Brands have to make a choice in which direction they would like to go," ESSEC's Mr. Som said. "Both categories, faux leather and lab-grown diamonds, would slowly find their position at the bottom of the pyramid.

"They will not create any desire, won't have any story to tell, neither any heritage," he said. "So a luxury positioning is challenging to achieve without the three main ingredients of timelessness, savoir-faire and heritage."

Best practices for alternative materials

- David Johnson, De Beers Group
 - "First, consider the defining characteristics of luxury. Luxury implies inherent preciousness, and this

results from a number of attributes such as rarity, authenticity, enduring value, uniqueness and craftsmanship. While LGDs are pretty and sparkly, they do not have the attributes that people look for in luxury items. This is why Lightbox was launched as an entirely separate business with a distinct fashion jewelry offering. Our luxury brands, De Beers Jewellers and Forevermark, only sell natural diamonds."

- "Second, always prioritize understanding your consumer. While people increasingly want personalized jewelry that says something about them and who they are as an individual, this does not necessarily mean they want other materials. With a creative approach, outstanding and original results can be delivered regardless. There may be a place for alternative materials for some products or some occasions, but those materials need to be justified on their own merits because they meet a particular customer need they shouldn't be there just for the sake of it, otherwise people will see through it as something offering not much more than novelty value."

- Andrea Boragno, Alcantara

- "The first best practice tip is to focus attention on all aspects related to sustainability. We believe in an emerging trend where the uniqueness of products and services are fused with an ethical vision of business and to respect for the environment."
- "Our second tip: There is a proven worldwide mega-trend where technical and functional features combine with emotional, aesthetic and sensory qualities. In this way, it creates a strong synergy with our brand, and today Alcantara incorporates this intersection, becoming the material of the future. We have some relevant supportive case histories in collaboration with Microsoft in the consumer electronics, Y's by Johji Yamamoto in the fashion field as well as many co-marketing activities in the automotive world with top clients as Lamborghini and Maserati, only to name a few."

- Ashok Som, ESSEC Business School

- "The two best practices would be to keep them separate as-far-as-possible from their iconic products [and] if they want, to create a separate category/entity completely different from their original product category with a completely different brand DNA, differentiation, segment, product category and offer."

- Nicolas Bargi, Save The Duck

- "Do appropriate research. The '0' impact does not exist. Producing something inevitably creates an impact. Any fabric can be made in a more sustainable way than it was years ago thanks to technologies."
- "Engage with local communities sustainability is not a point of arrival but a journey."