

# Tetex

EUROPEAN TECHNICAL TEXTILES MAGAZINE

**SPRING 2018**

## INNOVATIVE FIBRES

Basalt structures and fibres

## MEDICAL TEXTILES

Kirigami snake robot

## MARKET REPORT

Technical textile growth through 2020

## EVENTS CALENDAR

Upcoming events



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# Editorial



Dear Readers,

The spring is coming and temperatures are slowly rising. The sun has awakened new sources of energy in us and the result is the latest issue of Tetex Magazine! We are sure that this year is going to be far from boring.

Year 2018 is packed with amazing and interesting trade fairs.

We would love to meet you all during these events. We have managed to become Media Partner for Techtextil Moscow 2018 and Russian Textile Week, thus the spring issue is devoted to these events and includes all the best branch market innovations that are worth seeing.

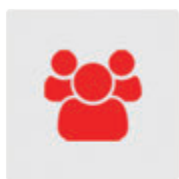
If you wonder how the market is developing - Tetex Magazine is definitely a must position for you! We hope you will enjoy the experience.

See you soon!

*Dorota Sakowska-Hunt*

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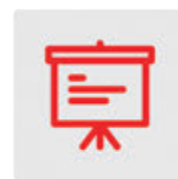
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In the architectural context basalt is utilized mainly as a solid material for surfaces. The volcanic rock melts at around 1.400 °C, enabling production of continuous basalt fibers, so called filaments. Basalt filaments are further processed into rovings, yarns or fabrics and used for technical applications like reinforcements for composite materials. Basalt fibers derive from natural resources and have various advantages. Produced from the most widespread rock on our planet, they can be fully recycled. Their tensile and compression strength is higher than that of glass fibers. Basalt fibers offer many potential applications due to their good mechanical, thermal and UV resistance, but they are still relatively unknown to a wider public.

In the design project „SteinWeich“, supervised by Professor Christiane Sauer, students from „weifensee kunsthochschule berlin“ developed experimental textile basalt structures. The title of this project refers to the different aggregation states



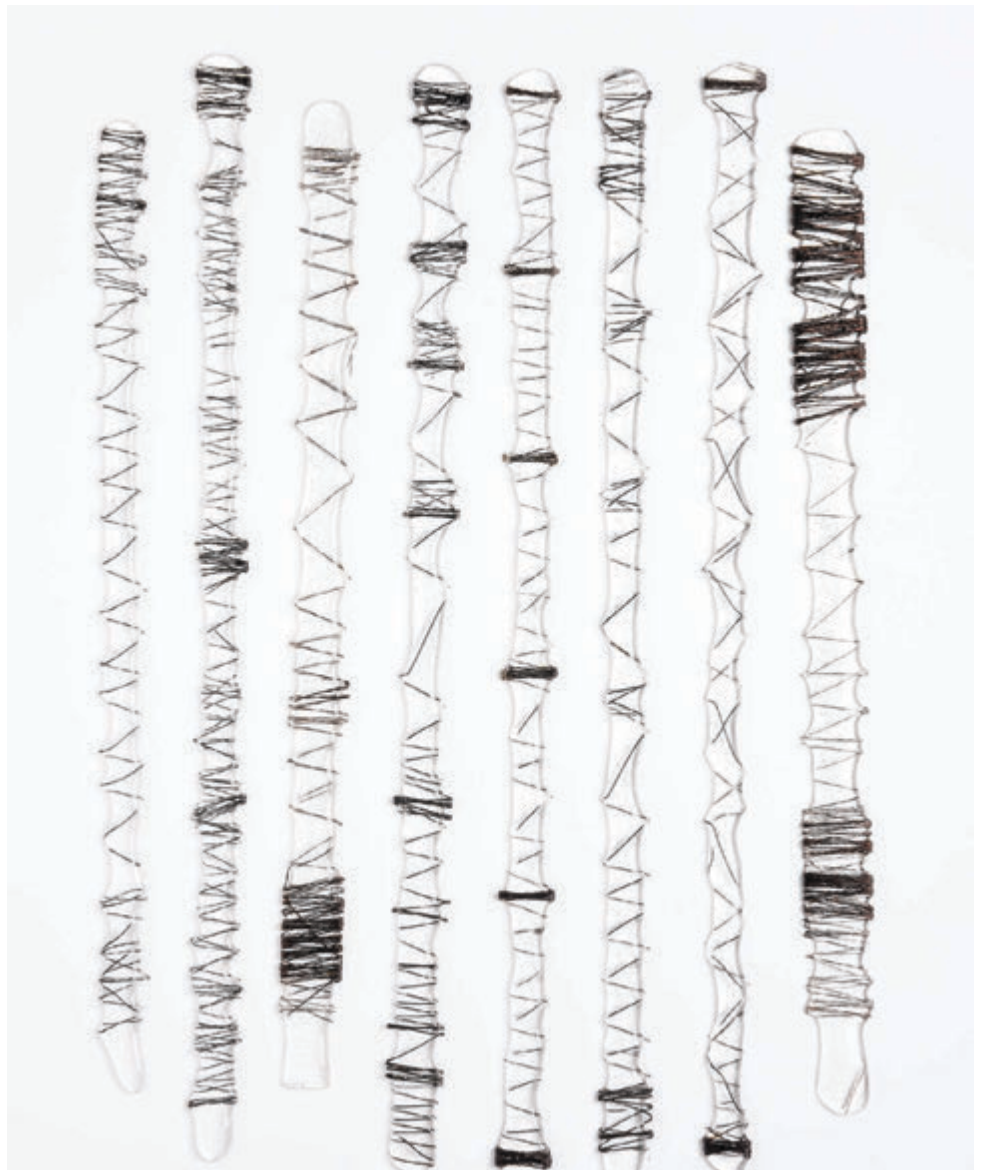




of the material: initially liquid lava, then solidified and thousands years later melted again and processed into soft fibers used for production of industrial fabrics. As part of „SteinWeich“, the shown student design projects highlight how the combination of aesthetic and function can reveal new applications for the material.

„Stone Web“ by Idalene Rapp and Natascha Unger, is a system in which individual modules are combined to create spatial structures. The hexagonal modules are manufactured by resinated basalt filaments of various thickness and density that varies according to structural or visual needs. They can be stacked horizontally, vertically or diagonally, offering a wide range of possible spatial configurations. Stone is used as an ultralight building material: one module weights only 50 grams, a wall with 80 modules around 4 kilograms.

For „Shifting Stone“ by Malu Lucking, Jack Randol and Rebecca Schedler, industrial basalt fabrics were manipulated in order to achieve a particular open structured pattern, mobility and transparency. Layers of fabric are combined into three-dimensional textile structures that can open and close the surface by shifting the layers vertically. In an architectural context the textile can be used for shading large glass facades and adapt to meet changing requirements for visibility and sun protection.

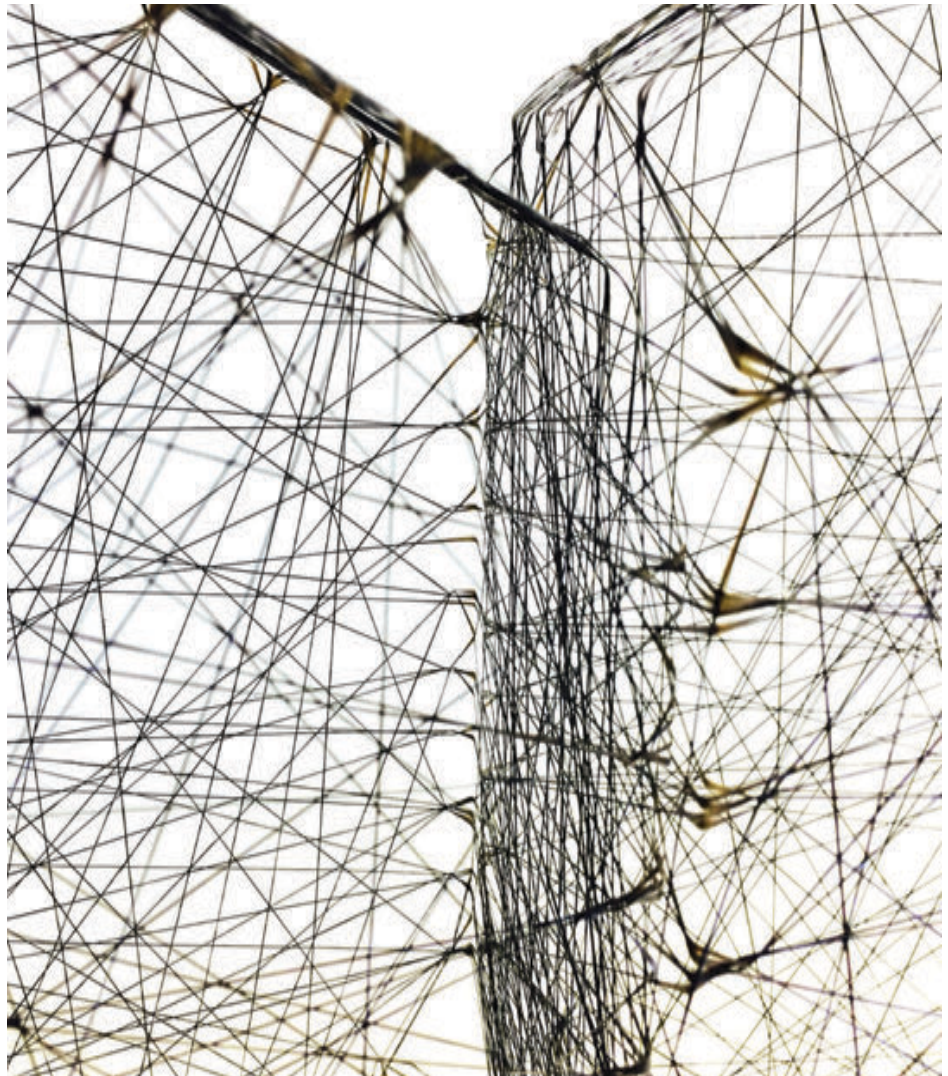




Vibrant textile structures are developed by manipulation of technical fabrics by Lena Ganswindt and Liina Leo in their project „Deformation“. Curtains or room dividers of various transparencies and three-dimensional plasticity are created through pulling individual threads, which keep its shape solely due to the material friction. The textile object can be configured according to light conditions due to the open or closed surface composition.

The project „Vaulted Stone“ by Abigail Wheeler, Boram Park and Rute Chaves, explores the structural potential of basalt fibers for lightweight construction. Using the traditional method of textile manufacturing, models for free-standing structures knitted with resin reinforced basalt filaments were created. The loops form an organic structure while simultaneously exhibiting a delicate but stable form. The variation in loop size and number can create openings to the space or a shading canopy.

The different aggregate states between solid and liquid, the interplay of melting and solidification are the inspiration of „Glass Poetry“ by Minyoung Han and Benjamin Gladki. The experiments took advantage of the heat resistance of basalt and glass. The composites were softened at 800 °C in the fusing oven, where the fibers became form defining or surface structuring elements.



Basalt fibers start melting at 1.200°C in an ceramic oven. The experiments for the project „1200°C“ by Charlotte Ackermann started with woven, crocheted and knitted basalt fibre structures that were heated up for glazing ceramic surfaces. This transformation produces optic and haptic textures that recall the origins of solidified lava.

These creative approaches show an amazing variety of the mineral material. The technical filament gains new life by using its properties for design purposes and new fields of applications.

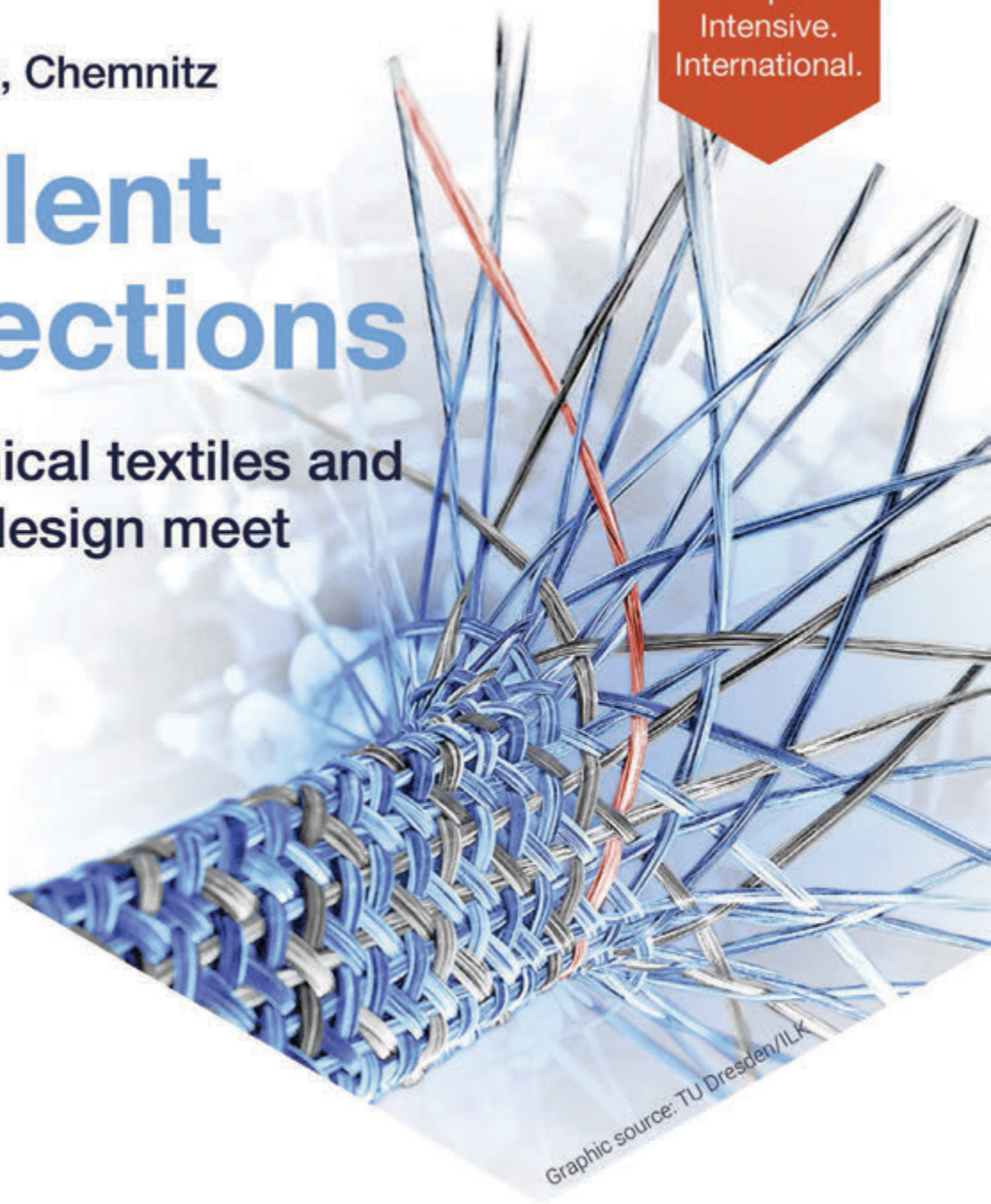


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## Stone and pineapple wear are the new trends

Fashion made of unusual materials doesn't just set an example in terms of appearance. When it comes to sustainability in particular, the innovative collections of numerous labels are the best examples of coolness coming into play when labels deviate from the usual well-trodden fashion paths.

During the upcoming Berlin Fashion Week the exhibiting labels at Greenshowroom and Ethical Fashion Show Berlin will show that fabrics and leather are not the only materials suitable to make fashion from, from 16 to 18 January at Kraftwerk Berlin.

### Sneakers made from stone

When it comes to stone shoes, most people think of the notorious and infamous concrete shoes from film classics such as "The Godfather". The stone trainers from the innovative Munich shoe label nat-2 by designer Sebastian Thies are far more light-footed and stylish.

Influenced by the style of the graffiti, street and board sport culture of the early 90s and the technically inspired 80s, nat-2 are keen to experiment with innovative materials. Nat-2 has teamed up with Roxxlyn from Berlin to produce exclusive natural stone accessories for their sneaker collection made from stone. This involves shale being made soft, light and flexible in an elaborate procedure and processed into genuine unique pieces by a family-run factory in Italy according to the principles of fair production. In addition to stone, the label also processes wood, corn, cork and glass into shoes.





### Blouses made from plastic bottles

Jan 'N June from Hamburg proves that colourless plastic bottles can be turned into silky shimmering blouses. For their minimalist collections, the two founders use a number of materials including recycled polyester, which is made from plastic waste such as PET bottles. The bottles are first shredded and melted down. The mass is then pressed through ultra-thin nozzles to create new fibres. And if you think this is all about colourful upcycling fashion in a patchwork style, you'd be wrong: Jan 'N June's fashion is cool and feminine - and wonderfully soft on the skin. All products are certified according to the Global Recycling Standard (GRS).

### Trousers made from car seats

The South Korean upcycling label Re:Code frees used clothing and textiles from their original purpose and redefines them as part of limited collections. For its Industrial Collection, the label transforms the soft covers of headrests in cars or discarded airbags into puristic tops, sweaters, trousers and accessories. Discontinued military tents, harnesses and camouflage clothing are incorporated into vintage items in the Military Collection. Even small elements such as buttons, zips and care labels find a new purpose in the form of cool details. Re:Code regards itself as a company with a sense of social responsibility and works specifically with young designers and socially disadvantaged people.



### Clutch made from pineapple leather

Delicious, healthy and fashionable too: the pineapple is a true all-rounder. Instead of the sweet fruit, however, it is the leaves of the pineapple plant, a by-product of harvesting, that end up being used in the bags of the Mallorcan label Maravillas Bags. Before the leaves are turned into chic bags, they are first broken down into fibres from which a form of non-woven fabric is created. Just like leather, this is water-repellent, supple and tear-resistant. This vegan and environmentally friendly alternative to leather is called pinatex. If you don't want to have to do without leather, Maravillas Bags also offer bags and accessories that have been tanned with vegetable products made from roots, bark or oak or olive tree leaves instead of the traditional and somewhat harmful substances.

### T-shirt prints using sunlight

When it comes to sustainable fashion, manufacturing processes play an important role alongside materials. Instead of placing them under a heavy printing press, the Portuguese label Light Factory produces its T-shirts using sunshine. The combination of light-sensitive ecological colour and sunlight are a natural way to create cool prints. This involves the slow fashion label doing nothing more than developing photos directly on textiles. The photographer Maria da Conceicao Pires is behind the label. The T-shirts, dresses and home accessories pay homage to their homeland of Portugal and incorporate typical motifs and patterns.



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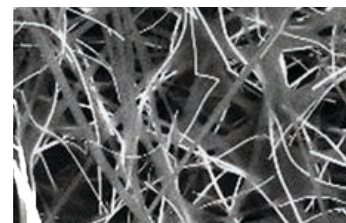
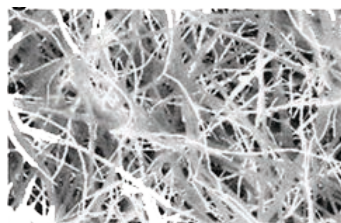
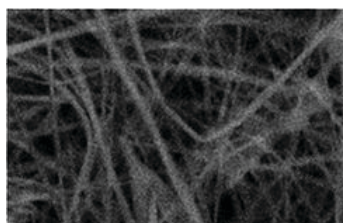
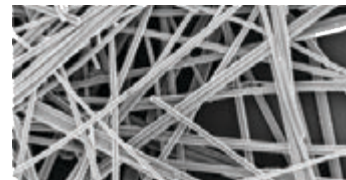
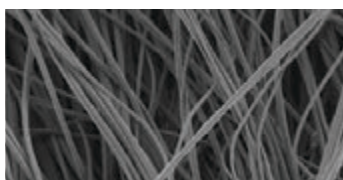
**BERLIN  
FASHION  
WEEK**



# Smart and comfortable: new textiles for high-tech clothing developed in Bayreuth

Uncomfortable, rigid, with low air permeability: textile materials capable of conducting electricity can be awkward for day-to-day use. However, researchers at the University of Bayreuth, Donghua University in Shanghai, and Nanjing Forestry University have now developed new nonwoven materials that are electrically conductive as well as flexible and breathable. This paves the way for comfortable high-tech clothes which, for example, convert sunlight to warmth, supply wearable electronic devices with electricity, or contain sensors for fitness training. The scientists have published their findings in the journal *npj Flexible Electronics*.

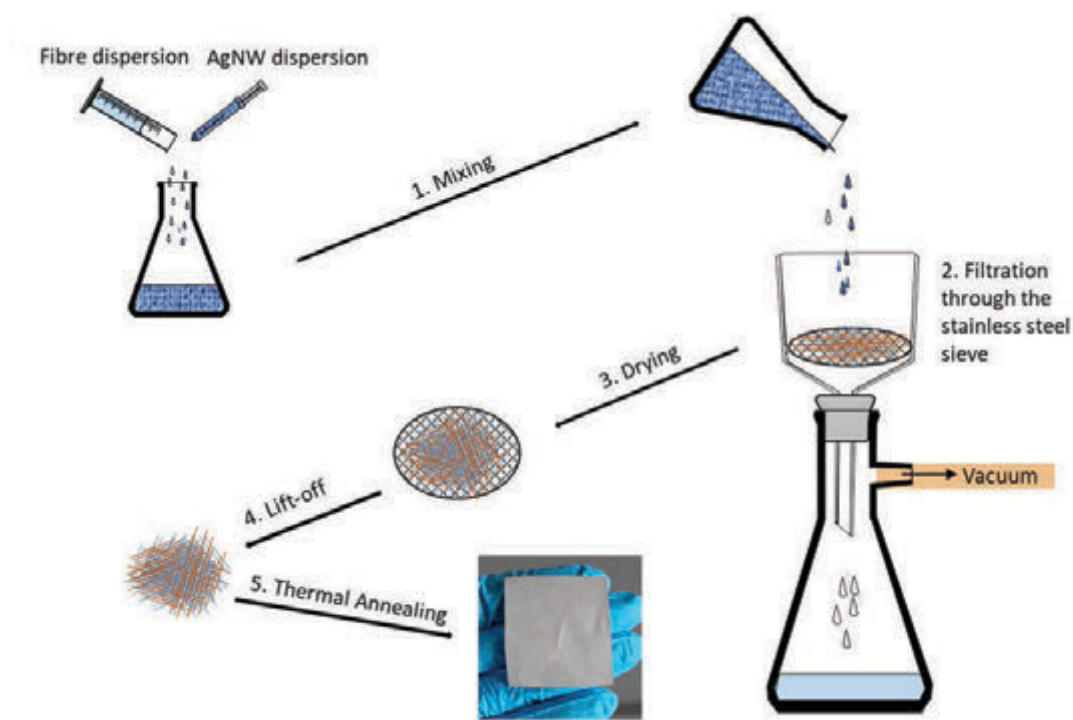
Prof. Dr. Andreas Greiner's team of researchers at the University of Bayreuth and their Chinese partners have succeeded in producing electrically conductive nonwovens which have all the other characteristics you would expect from clothing that is suitable for daily use. The materials are flexible, and thus adapt to movements and changes in posture. In addition, they are air-permeable, meaning they do not interfere with the natural breathing of the skin.





The combination of these properties is based on a special production process. In contrast to common methods of production, metal wires were not inserted into finished textiles. Rather, the scientists modified classical electro-spinning, which has been used to produce nonwovens for many years: short electro-spun polymer fibres and small amounts of tiny silver wires with a diameter of only 80 nanometres are mixed in a liquid. Afterwards, they are filtered, dried, and briefly heated up. If the composition is right, the resulting nonwoven material exhibits a very high degree of electrical conductivity.

This opens up a whole range of possibilities for innovative applications, especially in the area of smart clothes (i.e. wearables). Everyday clothing, for example, can be equipped with solar cells such that the captured sunlight is converted to warmth, heating up the textiles themselves. Mobile phones, cameras, mini-computers, and other wearable electronic devices could be charged by plugging them into the textiles. Sensors installed in the clothes could provide athletes and trainers with important fitness and health data or could give family and friends information on its location. "In addition to articles of clothing, similar functions could also just as easily be installed in textile materials for use in seats and instruments in cars or airplanes," explained Prof. Dr. Andreas Greiner, Chair of Macromolecular Chemistry II at the University of Bayreuth. "Our approach, which takes the production of conductive textiles as its



Article and photos courtesy of



basis, can in principle be applied to many different systems," added Steffen Reich, doctoral researcher and lead author of the new study. As an example, he cites current Bayreuth research projects on microbial fuel cells, which could eventually be used as electrodes in such nonwoven materials.

The research findings that were published in *npj Flexible Electronics* resulted from close cooperation between the University of Bayreuth, Donghua University in Shanghai, and Nanjing Forestry University. It was only two years ago that the University of Bayreuth signed a co-operation agreement with Donghua University, which has had a research priority on the research and development of textiles since the establishment of the institution. The mutual exchange in research and teaching that was agreed on is now beginning to bear fruit.





## SUPERPOWER OF ARTIFICIAL MUSCLES

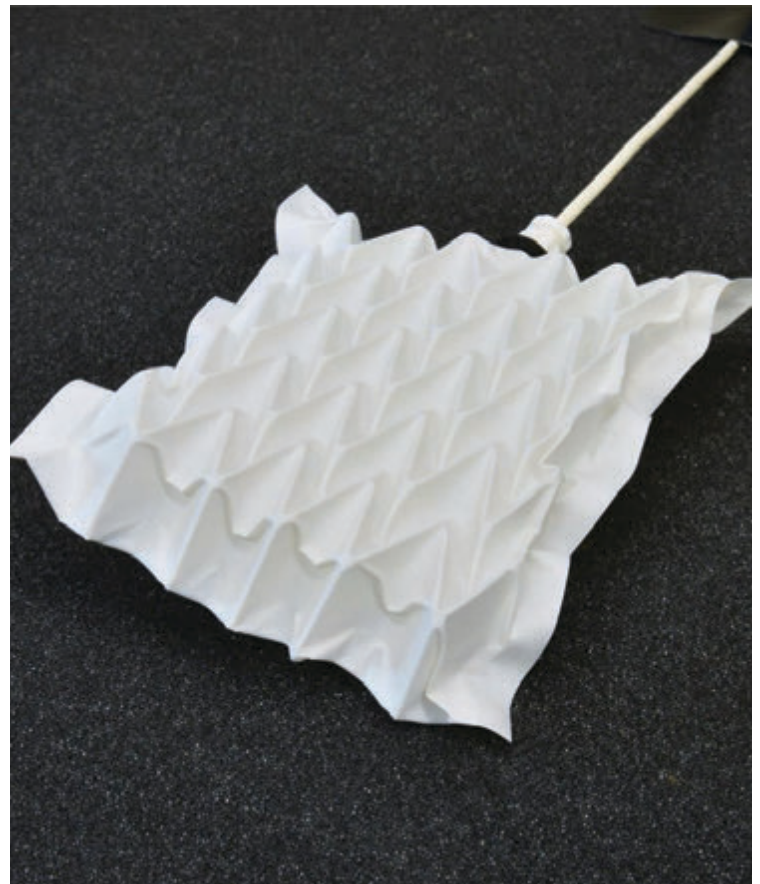
**Origami-inspired muscles are both soft and strong, and can be made for less than \$1**

(CAMBRIDGE, Mass.) — Soft robotics has made leaps and bounds over the last decade as researchers around the world have experimented with different materials and designs to allow once rigid, jerky machines to bend and flex in ways that mimic and can interact more naturally with living organisms. However, increased flexibility and dexterity has a trade-off of reduced strength, as softer materials are generally not as strong or resilient as inflexible ones, which limits their use.

Now, researchers at the Wyss Institute at Harvard University and MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL) have created origami-inspired artificial muscles that add strength to soft robots, allowing them to lift objects that are up to 1,000 times their own weight using only air or water pressure, giving much-needed strength to soft robots. The study is published this week in Proceedings of the National Academy of Sciences (PNAS).

"We were very surprised by how strong the actuators [aka, "muscles"] were. We expected they'd have a higher maximum functional weight than ordinary soft robots, but we didn't expect a thousand-fold increase. It's like giving these robots superpowers," says Daniela Rus, Ph.D., the Andrew and Erna Viterbi Professor of Electrical Engineering and Computer Science at MIT and one of the senior authors of the paper.

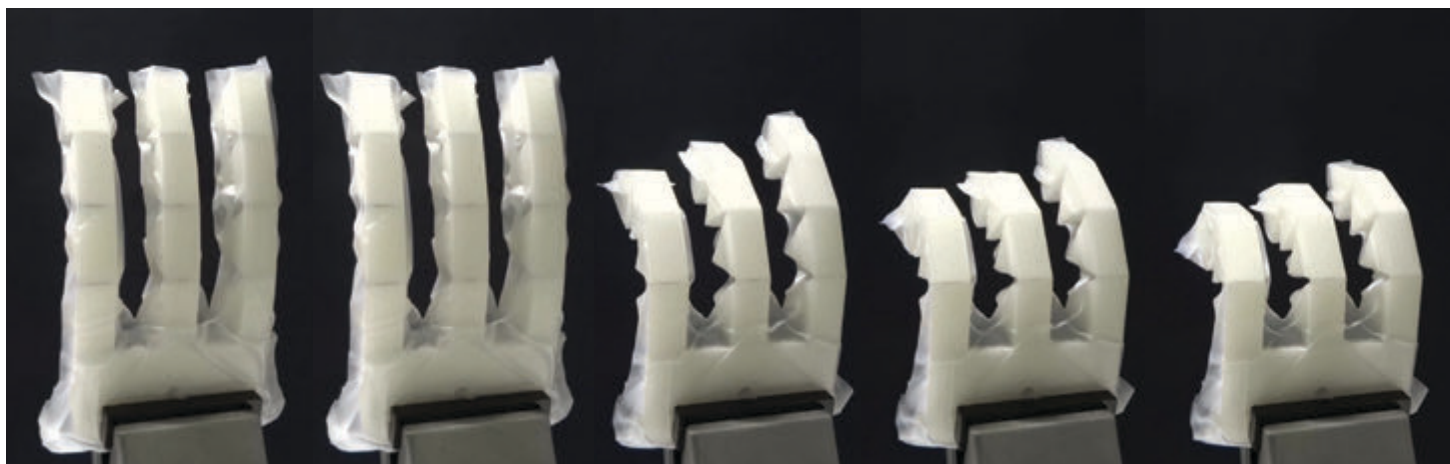
"Artificial muscle-like actuators are one of the most important grand challenges in all of engineering," adds Rob Wood, Ph.D., corresponding author of the paper and Founding Core Faculty





member of the Wyss Institute, who is also the Charles River Professor of Engineering and Applied Sciences at Harvard's John A. Paulson School of Engineering and Applied Sciences (SEAS). "Now that we have created actuators with properties similar to natural muscle, we can imagine building almost any robot for almost any task."

Each artificial muscle consists of an inner "skeleton" that can be made of various materials, such as a metal coil or a sheet of plastic folded into a certain pattern, surrounded by air or fluid and sealed inside a plastic or textile bag that serves as the "skin." A vacuum applied to the inside of the bag initiates the muscle's movement by causing the skin to collapse onto the skeleton, creating tension that drives the motion. Incredibly, no other power source or human input is required to direct the muscle's movement; it is determined entirely by the shape and composition of the skeleton.



"One of the key aspects of these muscles is that they're programmable, in the sense that designing how the skeleton folds defines how the whole structure moves. You essentially get that motion for free, without the need for a control system," says first author Shuguang Li, Ph.D., a Postdoctoral Fellow at the Wyss Institute and MIT CSAIL. This approach allows the muscles to be very compact and simple, and thus more appropriate for mobile or body-mounted systems that cannot accommodate large or heavy machinery.

Not only can the artificial muscles move in many ways, they do so with impressive resilience. They can generate about six times more force per unit area than mammalian skeletal muscle can, and are also incredibly lightweight; a 2.6-gram muscle can lift a 3-kilogram object, which is the equivalent of a mallard duck lifting a car.

Additionally, a single muscle can be constructed within ten

minutes using materials that cost less than \$1, making them cheap and easy to test and iterate.

These muscles can be powered by a vacuum, a feature that makes them safer than most of the other artificial muscles currently being tested. "A lot of the applications of soft robots are human-centric, so of course it's important to think about safety," says Daniel Vogt, M.S., co-author of the paper and Research Engineer at the Wyss Institute. "Vacuum-based muscles have a lower risk of rupture, failure, and damage, and they don't expand when they're operating, so you can integrate them into closer-fitting robots on the human body."

"In addition to their muscle-like properties, these soft actuators are highly scalable. We have built them at sizes ranging from a few millimeters up to a meter, and their performance holds up across the board," Wood says. This feature means that the

muscles can be used in numerous applications at multiple scales, such as miniature surgical devices, wearable robotic exoskeletons, transformable architecture, deep-sea manipulators for research or construction, and large deployable structures for space exploration.

The team was even able to construct the muscles out of the water-soluble polymer PVA, which opens the possibility of robots that can perform tasks in natural settings with minimal environmental impact, as well as ingestible robots that move to the proper place in the body and then dissolve to release a drug. "The possibilities really are limitless. But the very next thing I would like to build with these muscles is an elephant robot with a trunk that can manipulate the world in ways that are as flexible and powerful as you see in real elephants," Rus says.

"The actuators developed through this collaboration between the Wood laboratory at

Harvard and Rus group at MIT exemplify the Wyss' approach of taking inspiration from nature without being limited by its conventions, which can result in systems that not only imitate nature, but surpass it," says the Wyss Institute's Founding Director Donald Ingber, M.D., Ph.D., who is also the Judah Folkman Professor of Vascular Biology at HMS and the Vascular Biology Program at Boston Children's Hospital, as well as Professor of Bioengineering at SEAS.

This research was funded by the Defense Advanced Research Projects Agency (DARPA), the National Science Foundation (NSF), and the Wyss Institute for Biologically Inspired Engineering.Q

*Article and photos courtesy of*

WYSS  INSTITUTE





# LIFE-SAVING “GRAPHAIR” TECHNOLOGY BY CSIRO

Using their own specially designed form of graphene, ‘Graphair’, CSIRO scientists have supercharged water purification, making it simpler, more effective and quicker.

The new filtering technique is so effective, water samples from Sydney Harbour were safe to drink after passing through the filter.

The breakthrough research was published today in Nature Communications.

Almost a third of the world’s population, some 2.1 billion people, don’t have clean and safe drinking water,” the paper’s lead author, CSIRO scientist Dr Dong Han Seo said.

“As a result, millions – mostly children – die from diseases associated with inadequate water supply, sanitation and hygiene every year.

“In Graphair we’ve found a perfect filter for water purification. It can replace the complex, time consuming and multi-stage processes currently needed with a single step.”





While graphene is the world's strongest material and can be just a single carbon atom thin, it is usually water repellent.

Using their Graphair process, CSIRO researchers were able to create a film with microscopic nano-channels that let water pass through, but stop pollutants.

As an added advantage Graphair is simpler, cheaper, faster and more environmentally friendly than graphene to make.

It consists of renewable soybean oil, more commonly found in vegetable oil.

Looking for a challenge, Dr Seo and his colleagues took water samples from Sydney Harbour and ran it through a commercially available water filter, coated with Graphair.



Researchers from QUT, the University of Sydney, UTS, and Victoria University then tested and analysed its water purification qualities. The breakthrough potentially solves one of the great problems with current water filtering methods: fouling.

Over time chemical and oil based pollutants coat and impede water filters, meaning contaminants have to be removed before filtering can begin. Tests showed Graphair continued to work even when coated with pollutants.



Without Graphair, the membrane's filtration rate halved in 72 hours.

When the Graphair was added, the membrane filtered even more contaminants (99 per cent removal) faster.

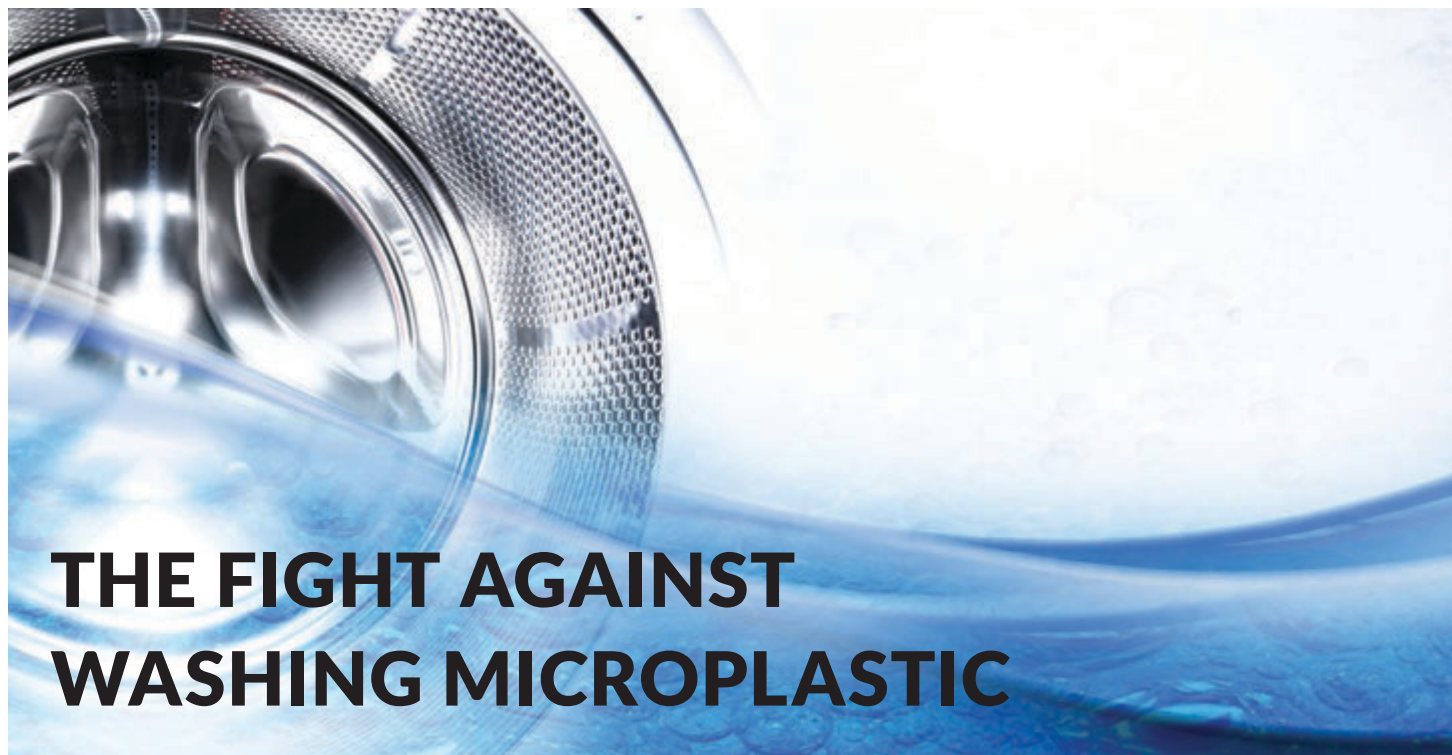
"This technology can create clean drinking water, regardless of how dirty it is, in a single step," Dr Seo said.

"All that's needed is heat, our graphene, a membrane filter and a small water pump. We're hoping to commence field trials in a developing world community next year."

CSIRO is looking for industry partners to scale up the technology so it can be used to filter a home or even town's water supply.

It's also investigating other applications such as the treatment of seawater and industrial effluents.



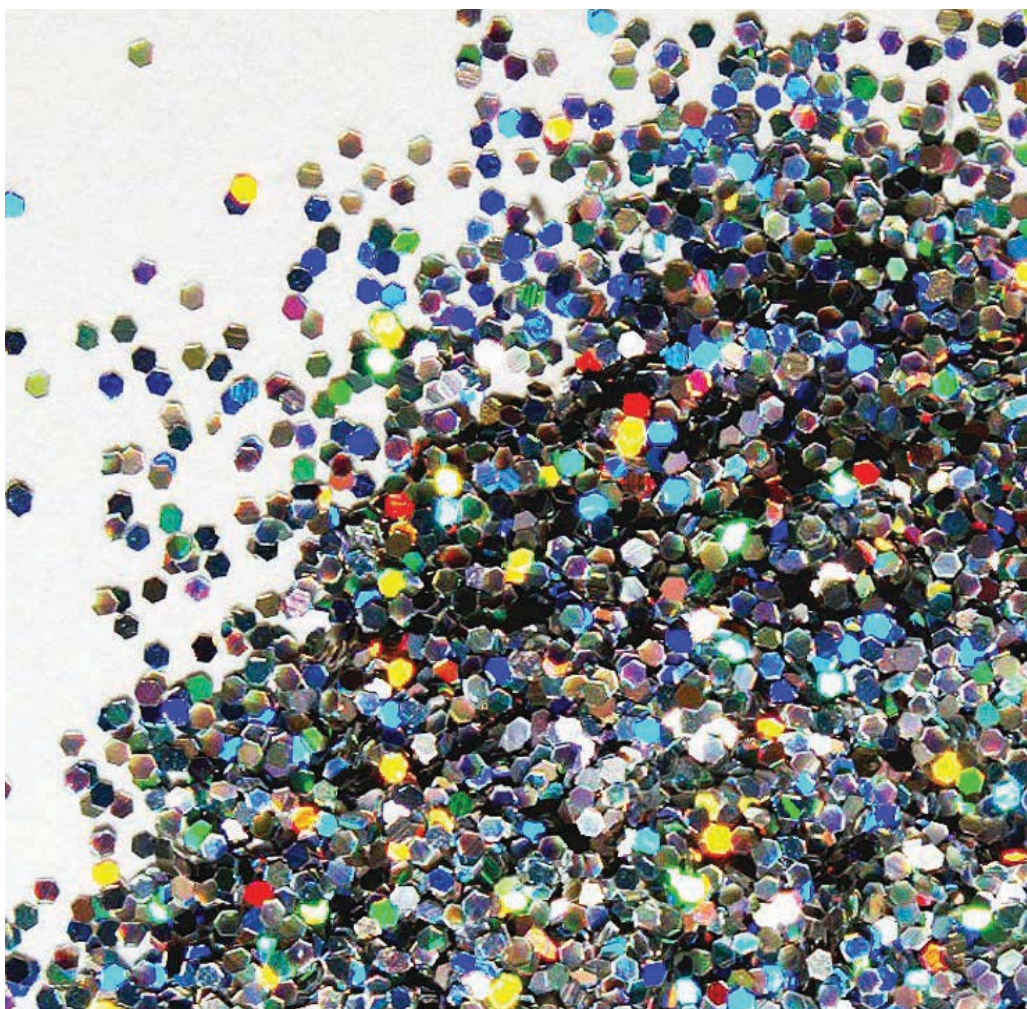


## THE FIGHT AGAINST WASHING MICROPLASTIC

A new industry agreement for the prevention of microplastic release from synthetic textiles washing was officially launched today and endorsed by the European Commission.

The European Textile and Apparel Confederation (EURATEX), the International Association for Soaps, Detergents and Maintenance Products (A.I.S.E.), the European Outdoor Group (EOG), the European Man Made Fibres Association (CIRFS) and the Federation of European Sporting Goods Industry (FESI) struck an agreement to address the release of microplastic in the aquatic environment.

The group of European industry associations, representing the global value chain of garments and their associated maintenance, agreed that viable solutions need to be found to the release of microplastic into global marine and freshwater during the entire lifecycle of textiles; which is highlighted as one of the sources of microplastic.





In the agreement the associations commit to a cross-industry coordination and stakeholder support through a set of effective and economically feasible measures:

**1) Define common measurement methods**

Agree on reliable and harmonised test methods to identify and quantify the type of microplastic present in water and in the environment

**2) Share Knowledge**

Call for collaboration across all relevant industry sectors and other organisations, including research, to share information, define common priorities to fill knowledge gaps and advise on mid and long-term measures  
Federation of the European Sporting Goods Industry

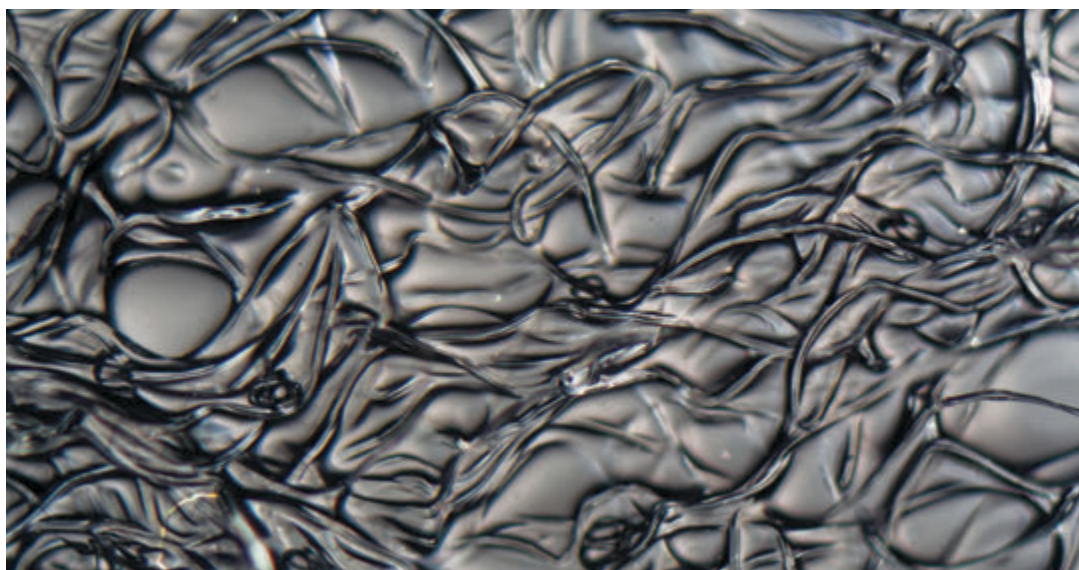
**3) Industrial research**

Support and participate in industrial research activities to investigate feasible options to tackle the release of microplastic and to contribute towards addressing a global problem.

The industry associations believe that through mutual work and better understanding of the issue feasible solutions can be found that can be effectively applied by industry, consumers, and authorities.



Article and photos courtesy of



Through the agreement the industries would like to tackle this issue that is potentially affecting billions of people worldwide. The first half of 2018 foresees the mapping of actions on test methods and on-going research, discussions on potential harmonisation methodologies and conceivable cross-industry collaborations. The goal, for the end of 2018, will be to draft a proposal for the European Commission. This proposal aims to fill knowledge gaps to identify and quantify sources of microplastic pollutions in order to work on possible solutions.



# ECOVERO™ STANDARDS FOR ECO-RESPONSIBLE VISCOSE.

Article and photos courtesy of



LENZING™  
**EcoVero™**

Lenzing™ EcoVero™ branded viscose fibers from Lenzing, with its state-of-the-art identification technology, supports eco-responsible fashion retailers and brands to become more transparent, especially with sustainability-minded consumers. Well known retailers are teaming up with Lenzing to advance their sustainability strategies with traceable Lenzing™ EcoVero™ fibers

## Transparency trending up in the textile industry

Society's environmental awareness has been growing steadily over the last decade, especially in the fashion and textile industry. Consumers today expect responsible retailers and brands to know their supply chains and to be able to trace product origins. To meet these increasing consumer demands, the industry is anxiously looking for more sustainable and transparent supply chain solutions. With Lenzing™ EcoVero™ fibers, Lenzing launches unique environmentally friendly and traceable viscose fibers. A special manufacturing system enables Lenzing to identify Lenzing™ EcoVero™ fibers in the final product, long after the textile processing and conversion steps have been completed. This ability to easily verify the original fibers means that retailers and brands can be sure that they are indeed incorporating Lenzing's eco-responsible viscose fibers, and not just any generic viscose that might not be in line with their sustainability goals. With this special identification technology for Lenzing™ EcoVero™ fibers, Lenzing provides an one-of-its-kind solution for the fashion industry and its supply chain to respond to consumer demands for reliable visibility of product origins that can be traced back to the fiber.

Lenzing™ EcoVero™ fibers the new benchmark in viscose fibers  
What makes Lenzing™ EcoVero™ fibers so eco-responsible? Lenzing enforces strict environmental standards during viscose production and has invested millions over the years to achieve eco-responsible production processes. Lenzing's viscose production sites where Lenzing™ EcoVero™ fibers are made comply with the stringent guidelines of the EU Ecolabel, a world-leading environmental manufacturing standard. Lenzing is also very transparent regarding raw material sourcing practices. Lenzing™ EcoVero™ fibers are made from wood.



The wood comes from sustainable forestry plantations that are independently certified by industry-leading associations. Lenzing has a comprehensive wood sourcing policy that goes above and beyond the call of duty to ensure that the most sustainable wood sources are used for viscose production. Lenzing™ EcoVero™ fibers set a new industry standard in sustainable viscose based on the use of these sustainable wood sources (FSC® or PEFC® certified) and an ecological production process with significantly lower emissions and water impacts than conventional viscose.

#### Retailers and brands teaming up with Lenzing

Leading industry brands and retailers are teaming up with Lenzing and are using Lenzing™ EcoVero™ fibers in their collections to improve transparency and traceability, two critical components of a verifiable sustainability strategy that is in line with the demands of today's market.

For Gina Tricot, a Scandinavian retailer, Lenzing™ EcoVero™ fibers are the solution for viscose fibers. "With the viscose fiber EcoVero™ from Lenzing, we can offer our customers an eco-friendly solution for the viscose segment. We appreciate the high standard in Lenzing's eco-friendly fiber production. Also, supply chain transparency is getting to be for us more and more important as customers want to know which kind of material is used for their garments. With the new identification technology from Lenzing, which is used in EcoVero™ fibers, we have full supply chain transparency. Our consumers can be sure that they are buying eco-responsible viscose garments", says Brand Director Anna Appelqvist.

Another retailer from Sweden, Lindex consider to take Lenzing™ EcoVero™ fibers into their collection. "We support Lenzing in their efforts of transitioning towards more sustainable viscose production. EcoVero™ fibers show concern for the origin of raw material as well as having a reduced environmental impact in the production process. We hope that this initiative will drive the development towards producing more sustainable viscose in the industry", explains Production Sustainability Manager Anna-Karin Dahlberg.

"The German brand ARMEDANGELS Viscose fiber production had been taking the wrong way for long time. We are more than happy to see Lenzing taking now the right step and being a pioneer in the industry by offering the first clean and sustainable viscose fiber made from certified wood in a new and clean process with the highest standards. Allowing brands to identify the use of Lenzing™ EcoVero™ fibers in the final product is adding an increased level of trust in the supply chain, thus ensuring full traceability. As a radically responsible fashion brand this is a great match for us and we are excited to be working with Lenzing to include EcoVero™ in our future product range", CEO Martin Höfeler is convinced.







# DURABLE PLANT BASED TEXTILE SOLUTIONS

Now, designers of apparel, footwear and gear will have even more options when looking for built-to-last durable fabrics that incorporate high performance materials across multiple layers.

INVISTA's CORDURA® brand and DuPont Tate & Lyle Bio Products have been collaborating throughout the year to create next-generation eco-efficient textile solutions. The series combines long-lasting abrasion resistance and bio-based Susterra® propanediol coatings and membranes, inspiring consumers to embrace the CORDURA® brand ethos that Sustainability Begins With Products That Last™. At A+A, the brands will unveil an innovative new soft-shell fabric development integrating DuPont™ Sorona® bio-based, high-performance fiber technology.

"As the CORDURA® brand celebrates its 50th anniversary in 2017, it's been the perfect time to reflect on five decades of cutting-edge durable fabric technology and collaborate with some very special partners," said Cindy McNaull, CORDURA® brand and global marketing director. "Working with the talented teams at DuPont Industrial Biosciences and DuPont Tate & Lyle to help define the durable, eco-efficient solutions of tomorrow with our latest CORDURA® + Susterra® + Sorona® soft shell technology has been an amazing opportunity to bring together the rich heritage we all share and is certainly one of the highlights of our 50 x 50 'heritage meets innovation' anniversary journey."





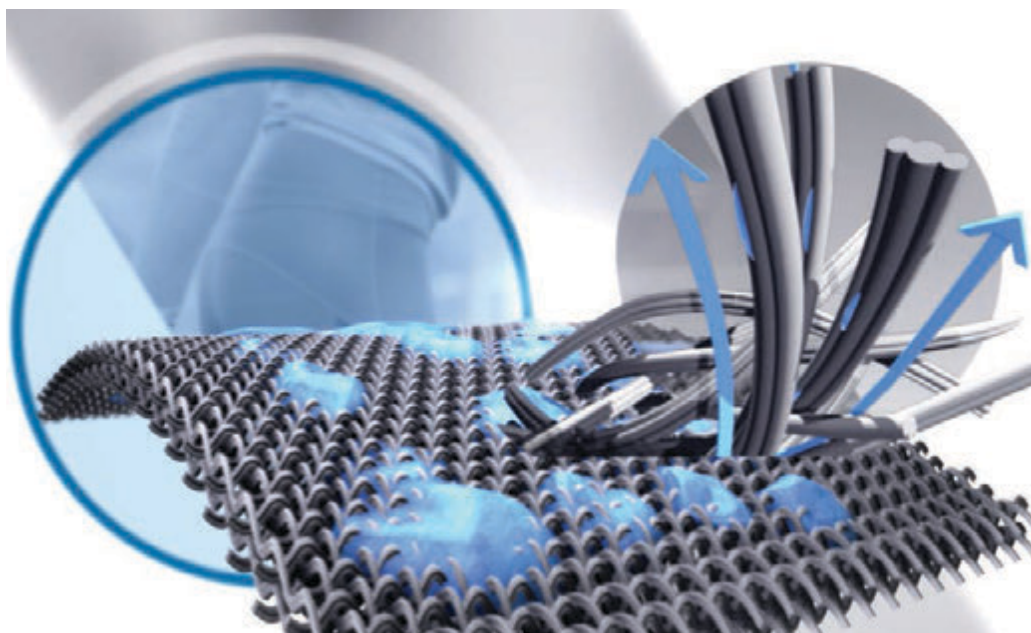
Since the early 1900s, DuPont has been revolutionizing the world of fiber and polymers. From the first plastic-coated fabrics developed in the 1910s to groundbreaking fibers like rayon, and nylon 6,6, neoprene rubber fabric, and more, DuPont has spent over a century creating textile products that transform the way we live and work. With this latest collaboration, the DuPont™ Sorona® brand, the DuPont Tate & Lyle Bio Products Susterra® brand and INVISTA's CORDURA® brand usher in the next chapter in textile innovation, combining long-lasting durability and bio-based, performance technologies.

"After decades of research and asking the right questions, DuPont scientists discovered a way to produce bio-based 1,3 propanediol - a building block with endlessly versatile potential," explains Laurie Kronenberg, global marketing director, DuPont Tate & Lyle Bio Products. "It is this building block that was created using modern biotechnology that powers both the Sorona® and Susterra® brand solutions and enables high-performance, renewable, plant-based fibers, coatings and membranes."

"Together, we are creating a legacy of innovative, eco-efficient textile solutions. DuPont™ Sorona® fibers will be an excellent addition to the 'CORDURA® + Susterra®' collaboration" states Renee Henze, global marketing director, DuPont Industrial Biosciences. "Sorona® fibers define softness, with exceptional resilience and is built on the same bio-based science as Susterra® propanediol making it a natural extension."



Article and photos courtesy of



To help make this idea a reality, the brands engaged authorized apparel fabric mill, Everest, to develop this durable bio-based CORDURA® fabric soft-shell solution. Everest's soft-shell laminate features a durable CORDURA® Naturalle™ fabric on the outer face, a middle layer polyurethane bio-based membrane containing more than 25 percent renewable sourced materials by weight and a soft fleece backing. The integration of the lightweight Sorona® fiber-based fleece helps provide cozy warmth and soft hand feel for day-in, day-out comfort. The result is a fabric engineered to help keep you comfortable through all of life's durable adventures with eco-efficiency in mind.





# SUSTAINABLE PRODUCTION OF NATURAL RUBBER

Technology company Continental and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH are joining forces in a development partnership to improve the sustainability of the natural rubber supply chain in Indonesia. The country is the world's second largest producer of natural rubber. The aims are to develop a criteria catalog for sustainable production of natural rubber, to train farmers in sustainable production in accordance with these criteria and to track the rubber from smallholders to production at Continental. Improved rubber quality, higher yields and supply chain optimization will generate higher incomes for rubber tree cultivators. The partnership between Continental and GIZ is part of the develoPPP.de program initiated by the German Federal Ministry for Economic Cooperation and Development (BMZ). To ensure that supply chain partners are on board, memorandums of understanding have been signed with two suppliers.





Rubber trees grow in the same area where the rain-forest grows. Therefore, it is important to ensure that rubber tree cultivation does not lead to deforestation. To safeguard and monitor sustainable rubber production, Continental and GIZ will implement a traceability system and increase the traceable production of rubber in West Kalimantan over the next three years. In total, 400 farmers will be trained to grow high-quality rubber in accordance with clearly defined sustainability criteria. An electronic system will be developed to ensure full traceability of the raw material along the entire supply chain.

“Our objective is to establish a traceable and sustainable supply chain and set a best practice example for the production of natural rubber,” said Nikolai Setzer, who is in charge of Corporate Purchasing and the Tire division in the Executive Board of Continental AG. “The partnership with GIZ gives us access to local players whom we need to achieve traceability and sustainability.”

Numerous sustainability activities at Continental Continental is consistently increasing the importance of sustainability in purchasing in other ways besides this development partnership. Despite already having a clear policy and enforcing mechanisms to avoid non-compliance behavior in the supply chain by its supplier, the Sustainability Management team in Corporate Purchasing at Continental is preparing a specific natural rubber sustainability policy for Continental to be released in 2018. This policy is designed to further reinforce the unquestionable commitment of the corporation to securing a healthy and compliant supply chain and the zero tolerance attitude toward deforestation, land grabbing and other practices that harm local populations and the entire eco-system. At the same time, Continental representatives on the World Business Council for Sustainable Development (WBCSD) are actively working to establish an industry standard for the sustainability of natural rubber. The eleven leading tire manufacturers in the world are involved in the WBCSD's Tire Industry Project.

Furthermore, in 2017 Continental worked with a service provider to establish a sustainability evaluation for existing and potential suppliers on the basis of standardized questionnaires. The scope of this evaluation is enormous as the company has to cover a couple of hundred companies currently supplying raw materials to its locations. At present, more than 80% of its Rubber Group raw material suppliers have already been evaluated and further development activities have already been started.



Article and photos courtesy of

**Continental** 



# THE GUIDE TO NATURAL AND SYNTHETIC FIBRES



PREFERRED  
SYNTHETICS

Preferred Synthetics are synthetic fibers that are ecologically and/or socially progressive because they have more sustainable properties in comparison to other conventional options. Synthetics currently defined by Textile Exchange as preferred includes: recycled polyester, recycled nylon, and potentially biosynthetics.

## BIO-BASED SYNTHETICS

A Biosynthetic is made using polymers created from either a part percentage or 100% natural and renewable resource. There are now biobased alternatives for polyester and nylon. Content claim standards include the USDA Certified Biobased Product scheme and the European Standard EN 16785-1:2015.



PREFERRED MM  
CELLULOSICS

Preferred Man Made Cellulosics (pMMCs) are sourced from nonendangered certified forests and are manufactured more sustainably. This means chemicals, water and energy are properly managed to avoid pollution and human exposure. pMMCs include: Lyocell, Preferred Modal and Preferred Viscose. There is currently no third party industry standard to support the sustainability claims of a pMMC through the processing of pulp and fiber. Chain of Custody from certified feedstocks can be provided by the main forest standards (such as FSC) and through Textile Exchange's Content Claim Standard (CCS).



PREFERRED  
COTTON

Preferred Cotton (pCotton) is cotton that is ecologically and/or socially progressive because it has more sustainable properties in comparison to other conventional options. Cottons currently defined by Textile Exchange as preferred include: Recycled, Organic, Fair Trade, Cotton made in Africa (CmiA) cotton, cotton grown to the standards set by the Better Cotton Initiative (BCI and its benchmarked equivalents), and CottonConnect REEL cotton.



PREFERRED  
WOOL

Wool defined as preferred includes wool that is grown with a progressive approach to land management, and from sheep that have been treated responsibly. The Responsible Wool Standard (RWS) is an independent, voluntary standard that includes strict animal welfare criteria, land management, and chain of custody. Wool has been recycled for many years, and this continues to be a strong choice for reducing waste. Wool may also be grown organically.



PREFERRED  
DOWN

Preferred Down is down that comes from supply chains that have strong animal welfare principles in place, with zero tolerance for force-feeding and liveplucking. Preferred Down is down certified to either the Responsible Down Standard or the Traceable Down Standard. The recycling of down and feathers is another option gaining traction.



**TextileExchange**  
Creating Material Change

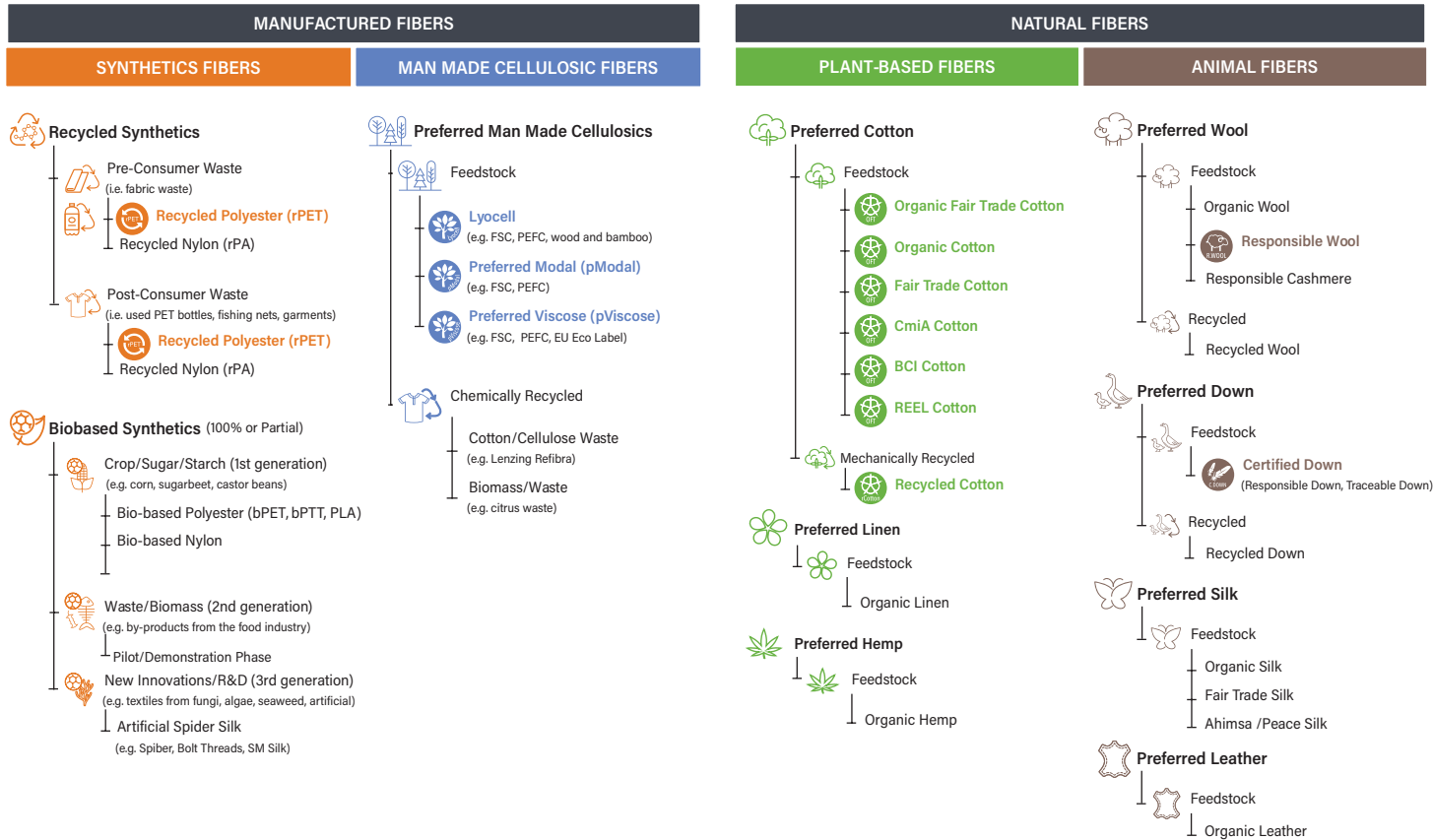
## RECYCLED

Fibers that have been manufactured from materials recovered from the waste stream. New products can be made from recycling natural fibers, such as cotton and wool, or synthetic fibers, such as polyester and nylon. Recycled products are made from pre- or post-consumer waste. Pre-consumer waste is the leftovers or by-products generated during manufacturing, such as from the spinning of yarn or the cutting of garments. Post-consumer waste has already passed through the consumer market and is recycled into a product for the market once again. Post-consumer waste includes plastic PET bottles, industrial fishing nets as well as used clothing. Best practice involves certification through the supply chain, for example to Textile Exchange's Recycled Content Standard (RCS), or the Global Recycled Standard (GRS). The GRS provides processing criteria as well as a content claim.

## ORGANIC

Fibers that are grown within a rotation system that builds soil fertility, protects biodiversity, and are produced without the use of any synthetic chemicals or genetic modification (GMOs). Organic fibers include cotton, linen, wool and silk. Growers must meet organic agricultural standards as set nationally, and by the importing country if export is carried out. Farm standards vary from country to country but are mandatory for recognition as organically grown. Best practice involves certification through the textile supply chain to Textile Exchange's Organic Content Standard (OCS), or the Global Organic Textile Standard (GOTS). GOTS provides processing criteria as well as a content claim.

# THE PFM CATEGORIZATION CHART



## THE BROADER FIBER MARKET

The growth of synthetic fibers in 2016 continues to dominate world trends. Synthetic fibers, predominantly polyester (64 per cent), was estimated at 64.8 million metric tons (MT)<sup>2</sup>, making up the largest share of global fiber production.

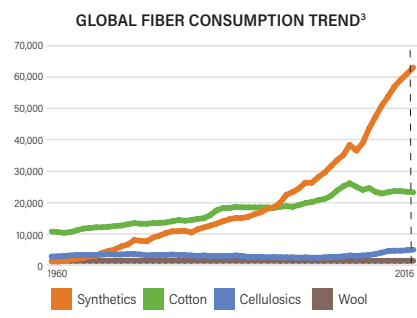
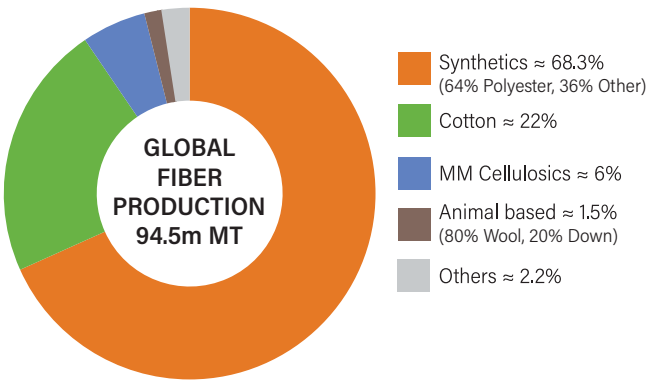
At 21 million MT<sup>3</sup>, cotton is the second largest segment in fiber production, making up approximately 22 per cent.

Estimated at 5.3 million MT<sup>4</sup>, man made cellulosic fibers, mostly viscose, makes up approximately 5.2 per cent.

Animal fibers volumes (wool<sup>5</sup> and down<sup>6</sup> figures based on 2015 data) were approximately 1.5 per cent of the global fiber production.

Consumption of synthetics fibers continue to rise, whilst consumption of cotton fibers saw a dip in 2016 (see trend graph below). There was a slight increase in man made cellulosic fiber consumption, while wool remaining on a fairly even keel.

Overall fiber consumption continues to grow, as it has done since the 1960s, but the year-on-year change for 2015-16 and 2016-17 (projected) is slowing down to two to three per cent compared to four to five per cent for the past five years.<sup>2</sup>





## THE PFM MARKET

A comprehensive picture of preferred fiber and materials production and consumption is not possible. However, a brief summary based on Textile Exchange research, is provided here.

In section three, we can get a good idea of trends and growth in the market by looking at what the 95 companies reporting into the PFM Benchmark are doing. Within each fiber category.

### Signs of Growth

Slowing the consumption of resources and moving towards a circular economy is an over-arching sustainability goal. Transferring from conventional to preferred and closing the gap on conventional fibers is another. The production of preferred, more sustainable, fiber alternatives is still very niche compared to conventional. However, as the sector organizes, the systems and technologies to enable the transition improve, the shift to preferred could start to accelerate.



### Preferred Synthetics

While we are witnessing a growing demand for recycled polyester (and nylon) among sustainability frontrunners, the growth of virgin polyester continues to dominate market trends. Price and quality are still concerns raised by brands and retailers. Textile Exchange estimates that approximately seven per cent of the 64.8 million MT of polyester was from recycled PET in 2016.

Hardly denting the surface of the textile market, there is a longer term vision for bio-based to become a viable alternative to petrochemical-based synthetics. According to the nova-Institute, bio-based polymers (for fuel, plastic and packaging) accounted for two per cent of global polymer production in 2013. While not impacting textiles yet, capacity for bio polymers is expected to increase faster than that of conventional polymers, leading to a four per cent share by 2020.



### Preferred Cotton

With the introduction of the Better Cotton Initiative (BCI) and Cotton made in Africa (CmiA), the preferred cotton (pCotton) sector has seen volumes of more sustainable cotton increase dramatically over the past few years. Globally, preferred cotton is now estimated at 15 per cent of total cotton production.



### Preferred Man Made Cellulosics

Man made cellulosics (MMCs) are reported to be the fastest growing fiber category. Lyocell is currently estimated at five per cent of global MMC production but expected to grow.



### Preferred Animal fibers

Although very small compared to all other fiber categories, the preferred down market is growing. Data is vague but Textile Exchange estimates that under one per cent of the down in the market is preferred.

The preferred wool market is niche but expected to grow. Less than one percent is currently from organic or Responsible Wool certified sources. percent of the wool market is from organic or RDS certified sources.

## MEGA TRENDS IMPACTING THE MARKET

Global megatrends shape markets and markets are shaped by global trends. Significant megatrends include:



**Ongoing population growth.** The population is estimated to rise from its current count of approximately seven billion people to >nine billion by 2050. There is expected to be an increase in the middle class. A growing middle class equates to an increase in purchasing power.



**Increase in urbanization.** The United Nations estimate that by 2030, one in every three people will live in cities with at least half a million inhabitants.



**Increasing resource constraints.** Increased shortages of resources drive tension between and within countries. Access to food and water will receive as much focus as oil and gas.



**Changing weather patterns.** Extreme weather events such as heat waves and storms are likely to become more frequent or more intense with climate change.



**Technological breakthroughs.** Digital innovation is changing our experience of the world, including the way we shop. People are more likely to use digital tools to articulate and fulfil their consumer needs. Breakthroughs in the technologies to close the loop on materials may radically change the textile industry.



**Shifts in consumer values.** Millennials are more likely to buy from companies whose values are like their own. Authenticity and transparency are paramount to this digital generation.

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## Technical Textile growth through 2020

Future Market Insights (FMI) delivers key insights on the global ABUS market in its upcoming outlook titled, “Automated Breast Ultrasound System (ABUS) Market: Global Industry Analysis and Opportunity Assessment, 2015 - 2025”. In terms of value, the global ABUS market is projected to register a healthy CAGR of 8.1% during the forecast period due to various factors, regarding which, FMI offers vital insights in detail. The global ABUS market is projected to register a CAGR of 8.5% in terms of volume during the forecast period.

On the basis of end user, the market has been segmented into hospitals and diagnostic imaging laboratories. The hospitals segment is estimated to account for 54.2% share in the global ABUS market by 2015 end, and is expected to register healthy CAGR of 8.2% in terms of value over the forecast period. In addition, in terms of volume, the segment is expected to record a CAGR of 8.7% during the forecast period. In terms of revenue, the hospitals segment is currently witnessing major contribution from Asia Pacific, North America and parts of Western Europe. Moreover, research and development on ABUS is likely to further fuel market growth during the forecast period.





The diagnostic imaging laboratories segment is expected to record a CAGR of 8.1% and 8.5% in terms of value and volume respectively during the forecast period.

Growth of the global ABUS market is mainly driven by increasing prevalence of breast cancer, growing radiology market, government advocacy for breast cancer awareness and extensive research and development for enhanced imaging techniques. Other trends driving market growth include strategic alliances among key players in the market, manufacturers eyeing mammography market share and expansion of healthcare sector in developing countries due to growing investments by major players. In addition, surge in demand for advanced medical devices owing to increasing health awareness and growing disposable income is cumulatively anticipated to result in increased spending on enhanced medical services. This in turn, is anticipated to bolster ABUS market growth during the forecast period (2015–2025).



Article and photos courtesy of  
Ethan Smith

This report covers trends driving each segment and offers analysis and insights into potential of the ABUS market in specific regions. North America is estimated to dominate the ABUS market with 42.0% market share by 2015 end, and is anticipated to remain dominant by 2025. North America and Western Europe collectively are expected to account for over 74% in the total ABUS market share in terms of value by 2015 end. Among all the regions, Japan is anticipated to register the highest CAGR in terms of value and volume respectively between 2015 and 2025, followed by North America due to increasing installations of ABUS owing to breast cancer prevalence and consumer concerns for early detection of breast cancer in these regions. Mammography X-ray is preferred as a gold standard technique for breast cancer detection among consumers especially in Asian countries. This lowers adoption of automated techniques used for detecting breast cancer and hence, offers opportunities for multiple modalities primarily for automated breast ultrasound system supported by regulatory approval for the same and offering additional diagnostic confidence to the patient as well as the radiologist.

# WHAT YOU WEAR MATTERS!

## A Fact Sheet on Organic Cotton - Lower Impacts for Agriculture and Apparel Industries.

Textile Exchange, publisher of the Organic Cotton Market Report, releases Quick Guide to Organic Cotton, an overview of the positive impacts of organic cotton, including frequently asked questions and supporting facts that indicate organic cotton is the preferred fiber choice compared to its chemically produced counterpart.

“The Quick Guide to Organic Cotton, highlights the benefit of organic production as a pathway to restorative, resilient and regenerative landscapes and communities,” notes La Rhea Pepper, the Managing Director of Textile Exchange. “Cotton production has evolved over the last 15 years,” Pepper said, and “greater awareness of the health, economic and environmental benefits of organic farming practices by farmers and buyers has influenced corresponding improvements in many cotton production systems, including the input intensive practices of chemically grown cotton.” According to its Preferred Fiber and Materials Market Report, Textile Exchange reports that adoption of preferred cotton production methods has grown to 8.6% of the cotton market but organic cotton, in general, continues to have the lowest environmental impacts.





Textile Exchange's Quick Guide to Organic Cotton includes the latest research from expert sources to create a comprehensive resource for the industry and media. The current research work reveals three top reasons to support the expansion of organic cotton agriculture:

### **1. The Health and Environmental Impacts of Pesticides Must Be Acknowledged in a Comparison of Organic and Chemically Grown Cotton Production.**

According to the USDA's National Organic Program, organic farming is defined as:

"the application of a set of cultural, biological, and mechanical practices that support the cycling of on-farm resources, promote ecological balance, and conserve biodiversity. These include maintaining or enhancing soil and water quality; conserving wetlands, woodlands, and wildlife; and avoiding use of synthetic fertilizers, sewage sludge, irradiation, and genetic engineering."

Organic cotton is grown without the use of toxic and persistent pesticides or fertilizers while chemical cotton is dependent on both. According to the Pesticide Action Network UK, "cotton crops cover 2.4% of the world's cultivated land but use 6% of the world's pesticides, more than any other single major crop."

There is an overwhelming body of research showing higher incidents of serious diseases and development problems from exposure to agricultural chemicals or physical proximity to chemical-based farming communities. The Agricultural Health Study, funded by the National Cancer Institute and the National Institute of Environmental Health Sciences, is one of the largest ongoing health studies with over 89,000 participants from farming communities and reveals higher incidents of cancer (including prostate cancer), Parkinson's disease, diabetes, thyroid disease and asthma.

### **2. What About Yields?**

A favorite argument in support of chemical agriculture is that the yields are higher.

~Carl Pepper, Farmer Texas Organic Cotton Marketing Cooperative

"I farm 4,000 acres of organic cotton in the middle of the world's largest cotton patch. My yields are equal to the conventional neighbors' cotton grown next to my organic fields. The premise that organic plants produce less is incorrect unless chemical drift retards their growth."



Chemically intensive agriculture, especially in irrigated systems, push the ecosystem year-on-year for higher yields. This requires the use of an ever-increasing amount of chemical inputs, including growth regulators.

### 3. A Reality Check About Water and Cotton.

It is well established that cotton agriculture and apparel manufacturing, in general, require significant amounts of water. Whether the cotton is grown with chemicals, or organically, each farm and geographic region of the world will have different water usage and impacts. However, the notion that chemical cotton uses less water than organic cotton is false. Textile Exchange initiated a peer-reviewed Life Cycle Analysis (LCA) on organically grown cotton that uses the same methodology and the same LCA consultancy as was used for chemically grown cotton to ensure the most reliable information to base comparisons. Based on the LCA findings, organic production of cotton for an average sized t-shirt resulted in a savings of 1,982 gallons of water compared to the results of chemically grown cotton.



The real issue about water is pollution. Toxic chemicals used in conventional cotton production are poisoning the very water it claims to save.

What Can Consumers Do to Influence Improvements in Cotton Agriculture and Apparel Manufacturing?

“Textile Exchange believes that consumers who care about the environment and the farming communities which produce the cotton for their clothing, should support brands and retailers using organic and preferred cotton,” advocates Ms. Liesl Truscott, Materials Strategy Director for Textile Exchange. The latest Organic Cotton Market Report produced by Textile Exchange reveals the Top 10 users of organic cotton by volume:

1. C&A
2. H&M
3. Tchibo
4. Inditex
5. Nike, Inc.
6. Decathlon
7. Carrefour
8. Lindex
9. Williams-Sonoma, Inc.
10. Stanley and Stella

Textile Exchange, whose 200+ members represent leading brands and retailers in the global apparel and textile industry, has been working alongside organic cotton stakeholders for 15 years. Other companies with organic cotton programs are also revealed in the full report

Brands and Retailers Interested in Organic Cotton Should Benchmark Their Usage Against the Industry.



The Preferred Fiber and Materials Benchmark (PFM Benchmark) provides a robust structure to help companies systematically measure, manage and integrate a preferred fiber and materials strategy into mainstream business operations, to compare progress with the sector, and to transparently communicate performance and progress to stakeholders. A preferred fiber is defined by Textile Exchange as a fiber, material or product that is ecologically and socially progressive; one that has been selected because it has more sustainable properties in comparison to other options. Organic cotton is a preferred fiber based on its lower impacts as reported in Textile Exchange's Material Snapshot on Organic Cotton.

Companies follow a self-assessment process intended to help identify the strengths and the gaps where future progress can be made. By comparing section scores with those achieved by the whole sector, companies can plan improvement efforts and prioritize action areas. Key indicators (inputs, outcomes, and impacts) of the PFM Benchmark are monitored through a Barometer of Progress and align with Sustainable Development Goal #12: Ensuring sustainable consumption and production and supporting sustainable agriculture under Sustainable Development Goal #2. See Textile Exchange's commitment to the Sustainable Development Goals [here](#).

Additionally, Textile Exchange hosts various preferred fiber working groups (including the Organic Cotton Round Table (OCRT)) with an upcoming meeting being held at its annual Textile Sustainability Conference during the week of October 9th outside of Washington, D.C. The Agenda for the preferred fiber working groups and OCRT is available [here](#).

**About Textile Exchange:** Textile Exchange, founded in 2002, is a global nonprofit organization that works closely with all sectors of the textile supply chain to find the best ways to create positive impacts on water, soil, air, animals, and the human population created by the textile industry. Textile Exchange accomplishes this by providing the knowledge and tools the industry needs to make significant improvements in three core areas: Fiber and Materials, Integrity and Standards, and Supply Chain. A truly global organization, Textile Exchange is headquartered in the U.S. with Staff and Ambassadors located around the world.



Article and photos courtesy of



# PVC FLAME-RETARDANCY GUIDE INDUSTRY KNOW-HOW

Raw materials and textile materials of both natural and artificial origin, are currently finding a wider and wider range of applications. Textiles are used in many areas of everyday life, as well as technical materials. The widespread use of textiles also carries all kinds of risks these products can create. One of them is the fire hazard.

There are several parameters commonly regarded as necessary to determine the properties of combustible materials:

- **flammability** – defined as the minimum time of impact on a sample of a low-energy source of ignition until the start of the determined combustion
- **flame spread** – speed of flame front travel after initiation of its combustion
- **heat release** – the amount of heat generated in a unit of time during the combustion of the tested material
- **smoke production** – tested by measuring the optical density of air in the vicinity of the burning material
- **production of toxic gases** – here, under standard test conditions, the quantities of gases generated in the process of thermal decomposition and combustion of the tested material are determined.



In the European system, construction products are classified in a manner significantly different from the descriptive terms used in Poland regarding the degree of flammability of materials. In national technical and construction regulations regarding the degree of flammability and fire properties, the following definitions still exist:

- **non-flammable materials**
  - **combustible materials that we divide into: non-flammable and easily flammable**
  - **as well as materials that do not spread fire or self-extinguish.**
- In contrast, European requirements, described in the EN13501-1 standard, use the Euroclass system, classifying building materials



in terms of reaction to fire as classes: A1, A2, B, C, D, E, F together with additional criteria taking into account smoke production and occurrence of burning drops.

PVC materials, which Sako-Expo is the dealer for the world wide market, are considered flame-retardant when they can not support fire at all. Normal materials of good brands should not burn quickly and according to ISO 3795 they do not burn faster than 100 mm/min. So if the material burns 50 mm / min it is better regarding this parameter, but it is not slow-burning. For a flame-retardant threshold, this should be 0 mm/min. Sometimes a different DIN 75200 standard is used to describe the behavior with fire. In order for the material to be flame-retardant it must resist fire fully – this is described by a number of standards. Here the choice is made from the point of view of the product to which the material is to be used, or simply the customer's requirements.



# TARPAULIN AND TENT PVC MATERIALS



SIOEN

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TECHTEXTILPLAST  
[www.sakoexpo.com.pl](http://www.sakoexpo.com.pl)



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textile

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22-24 НОЯБРЯ 2018

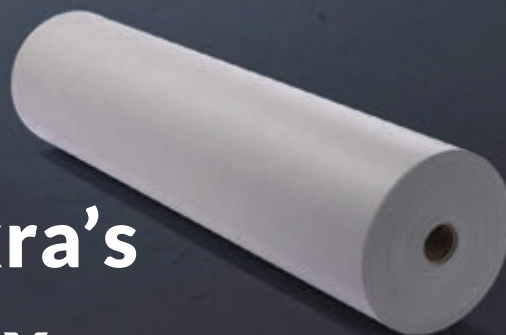
ТКАНЬ | ТРИКОТАЖ | ОБОРУДОВАНИЕ | ПРЯЖА | УСЛУГИ | АКСЕССУАРЫ | ФУРНИТУРА



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# New addition to Tekra's flame-retardant family



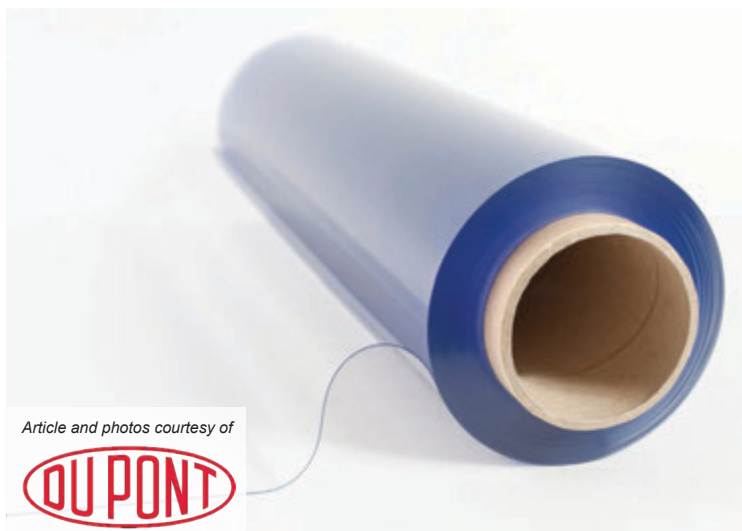
New Berlin WI - Tekra, A Division of EIS, Inc. has added new flame retardant films from DuPont Teijin Films™ offering high performance, low cost alternatives to engineers in the electronics, construction, labels, and lighting industries. Halogen-free, white Teijin® Tetoron® UF Polyethylene Terephthalate (PET) films and the Teonex® QF Polyethylene Naphthalate (PEN) films combine inert chemical resistance, excellent tensile strength and dielectric properties with the VTM-0 flame rating available from Underwriters Laboratories' UL 94 flame classification testing.

"DuPont continues to offer product innovations that deliver high value, cost effective solutions for our industry," states Kevin Suino, Market Development Specialist for Polyester Films. "Customers continually challenge the performance limits of traditional polyester films, and these two new film types extend the limits for Design Engineers to VTM-0 certifications." There are other thermo engineered flame retardant products on the market, however most are higher priced. Polyimide (PI)



film falls into that commercial category. And, while most polyester films have excellent resistance to heat, chemicals and water absorption, they typically are assigned a flame classification rating of VTM-2 or higher. This flame rating limits the applicable range of electronics and related applications.

Teijin® Tetoron® UF PET and Teonex® QF PEN films are both white and halogen-free films. Tekra has access to a range of thicknesses from 25 to 250 microns. Focus of product introduction has targeted insulating materials and labels for electronic products and batteries, in addition to flexible printed circuitry and lighting. These products provide more than 90% diffuse reflectance across the visible wavelength spectrum, in thicknesses of 125 or more, which is desired by many LED lighting applications. For more extreme temperature applications, Teonex® QF PEN film is capable of withstanding processing temperatures in excess of 180°C.



Article and photos courtesy of





# FORMABLE GASOLINE-RESISTANT BIOPLASTIC FILM BY TEIJIN

Tokyo, Japan, February 14, 2018 - Teijin Limited announced today that it has developed a formable gasoline-resistant film made of PLANEXT® bioplastic to replace chrome plating, which Honda Lock Mfg. Co., Ltd. has now adopted for nonconductive door handles integrated with smart-entry systems. Teijin developed the innovative film using a special metal-evaporation technology from a processing-manufacturer partner. Teijin is currently developing other automotive applications in addition to mass producing the film for door handles.



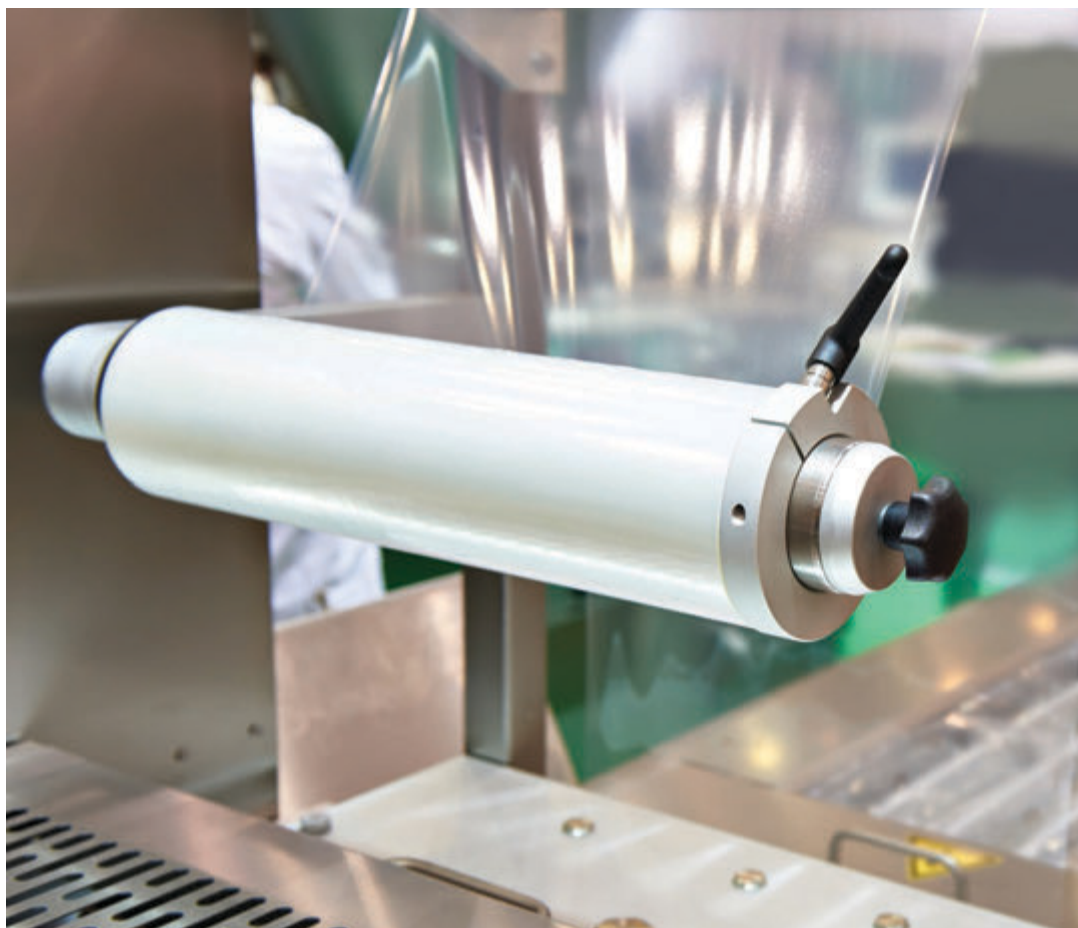
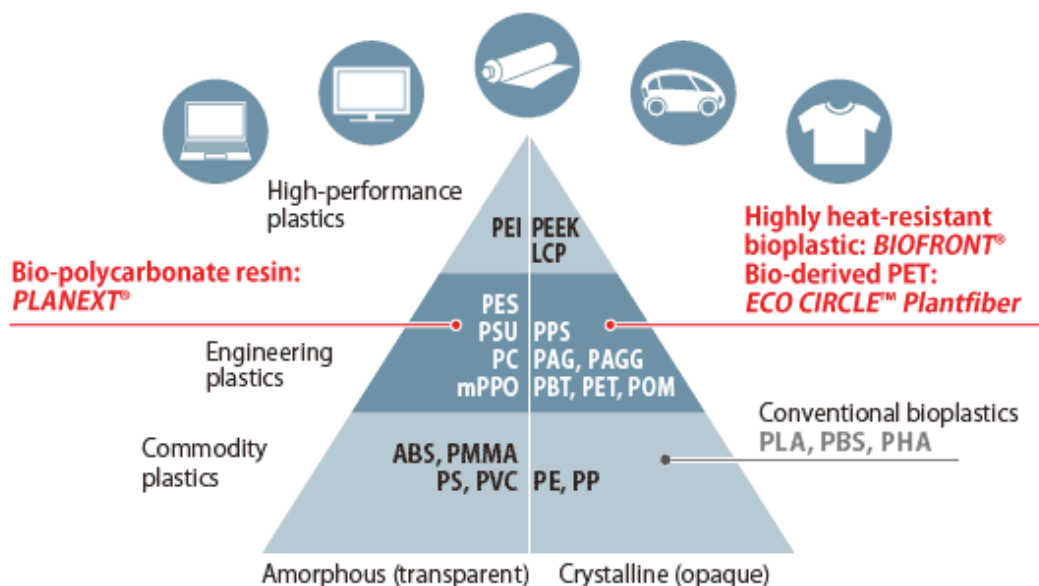
*Honda Lock's door handle of smart entry system*

# TEIJIN



This new film is made with PLANEXT® SN4600, an improved grade of Teijin's PLANEXT® bioplastic, which is made from a bio-origin chemical compound called isosorbide. In addition to original PLANEXT® properties such as chemical resistance, transparency and surface hardness, polymer reforming is used to give PLANEXT® SN4600 important new properties including gasoline resistance, formability, UV resistance. Teijin's gasoline-resistant film is ideal for vehicle doors, which of course have the possibility of coming into contact with gasoline. Optimized heat resistance and filming technology enable high formability for fashioning into complicated shapes. UV protection helps to shield the base material and prevent discoloration.

## Development of Teijin's Bioplastics



Vehicle door handles are increasingly being integrated with secure smart-entry systems that enable doors to be locked and unlocked by simply placing one's hand on a handle sensor.

The material surrounding the sensor, however, must be non-conductive to avoid sensor malfunctions, so conventional door handles made of electroconductive chrome plating coated on a resin base are not suitable.

Plastic films made with a metal-evaporation process are non-conductive and already being used as metal substitutes for automotive exteriors, but they are not suitable for door handles because they are neither gasoline resistant nor highly formable.

# Teijin Marks a Century of Innovation at JEC World 2018

The Teijin Group announced today that it will showcase a wide range of high-performance composite products at JEC World 2018, the annual exhibition that will take place this year from March 6 to 8 in Paris.

Celebrating a century of innovative development since its founding in 1918, the Teijin Group (hall 6, booth G28) will present several of its composite and material solutions. The comprehensive presence of the Teijin Group at JEC World 2018 is an evidence of its range of solutions with its high-performance materials and composite technologies for a diverse array of applications such as aerospace, automotive, marine, civil engineering, energy, oil and gas, sporting goods, heat and flame protection and ballistics.

## Composite Solutions:

-Tenax® Part via Preform (PvP) enables serial production of carbon fiber reinforced plastic (CFRP) automotive parts. Tenax® carbon fiber is sprayed, consolidated and trimmed automatically into near net-shape preforms, helping to reduce carbon fiber waste and minimize intermediate processing. The injection uses a high-pressure resin transfer molding (HP-RTM) technology including an in-mold coating step providing easy surface painting. An automotive part produced in small series will be exhibited.

-Sereebo® is the world's first mass-production technology for carbon fiber reinforced thermoplastic (CFRTP) and improves production efficiency by significantly reducing molding time to less than one minute. Useful solutions are possible for high-volume mass production of automotive parts such as front bulkhead, crash can, and more.

-TCA Ultra Lite® is a 1.2 specific gravity sheet molding compound. It offers a premium Class A finish with paint and gloss qualities comparable to metals, including aluminum. The material is able to withstand the E-coat process, and passes all OEM paint tests and is currently in production on 21 body panel assemblies of the 2017 Chevrolet C7 Corvette.



Article and photos courtesy of

**TEIJIN**



## Material Solutions:

-Tenax® carbon fibers are high-tech carbon fiber products, which significantly enhance properties in thermoset and thermoplastic composites. Tenax® ThermoPlastics provide high mechanical performance, chemical resistance and recyclability. Combined with rapid production processes, they allow short processing time and low scrap rates.

Tenax® Dry Reinforcements are specifically designed textiles for infusion technology such as woven and non-crimp fabrics that provide excellent potential for high production rates, integral structures, complex shapes and flexibility of parts design. They fulfill the highest standards in performance for the aerospace industry.

-Twaron® and Technora® para-aramid fibers offer attractive energy-saving and eco-minded solutions such as air freight containers made from Twaron® which are not only light weight but also flame- and heat resistant.

-Endumax® Ultra High Molecular Weight Polyethylene (UHMWPE) provides superior strength, dimensional stability, light weight and durability as demanded in ballistic protection. Endumax® allows the production of extremely large plates suitable for armoring even large vehicles. High-tech laminated sails that integrate Endumax® which can easily meet higher expectations and requirements will be showcased.

JEC World 2018 is organized by the JEC Group, the world's largest composites industry organization with a network of 550,000 composite industry professionals around the world.



## About the Teijin Group

Teijin (TSE: 3401) is a technology-driven global group offering advanced solutions in the areas of environmental value; safety, security and disaster mitigation; and demographic change and increased health consciousness. Its main fields of operation are high-performance fibers such as aramid, carbon fibers & composites, healthcare, films, resin & plastic processing, polyester fibers, products converting and IT. The group has some 170 companies and around 19,000 employees spread out over 20 countries worldwide. It posted consolidated sales of JPY741.3 billion (USD 6.5 billion) and total assets of JPY 964.1 billion (USD 8.5 billion) in the fiscal year ending March 31, 2017.

# FILTRETE™ SMART AIR FILTER BY 3M

Filtrete™ Brand from 3M today announced the arrival of the Filtrete™ Smart Air Filter, the first-ever Bluetooth®-enabled HVAC air filter for the home. The new filter takes the guesswork out of when it's time for a filter change, and provides other information so homeowners can take control of their home's air.

Filtrete™ Smart Air Filters contain a Bluetooth®-enabled pressure sensor that, when paired with the new Filtrete™ Smart App, will notify users when the filter needs to be replaced based on air flow and usage, not just time. The Filtrete Smart App also provides data on outside air quality and gives helpful tips for helping to improve air quality indoors. Users can decide how much interaction they have with the Filtrete Smart App by opting-in to specific smartphone notifications to alert them when it's time to change their filter or even when outdoor air quality in their area is poor.

"When we talk with consumers, many know their air filter is designed to last on average three months, but every home is unique. Homeowners are unsure how their home's environment impacts their indoor air and the optimal time to change their air filter. And, they often forget important details like their filter size and type when it is time to change," said Amanda Dauphinais, Global Business Unit Manager, Filtrete Brand. "The Filtrete Smart Air Filter takes the guess work out, helping homeowners take control of the air in their homes."

While the EPA recommends checking an air filter on a monthly basis and changing them at least quarterly<sup>1</sup>, Filtrete research shows it's not uncommon for consumers to wait much longer between filter changes.

## Filtrete Smart Air Filter and App Features

**Helpful Reminders.** The Filtrete Smart App remembers filter type and size and can send notifications to the user when it's time for a replacement.

**Filter Life Tracking.** The app tracks filter life based on air flow and usage – not just elapsed time. It utilizes a proprietary 3M algorithm to determine filter life by balancing airflow and optimal particle capture efficiency. The app updates with the latest data collected from the filter to provide users with timely information on filter's status, quickly and easily.

**Simple Filter Replacement.** The app can direct users to online retailers that carry the exact Filtrete Smart Air Filter they need for easier repurchase and replacement.

**Helpful Information and Tips.** The app can display outdoor air quality information for multiple locations and provide tips to help improve indoor air quality as well.

**Real-time Indoor Air Quality Readings.** Consumers can use the app to get real-time data on their indoor air quality by pairing it with a compatible indoor air quality monitor (devices sold separately).



"The Filtrete Smart Air Filter helps monitor factors related to indoor air quality and provides data-driven alerts and replacement reminders, which is important because most people spend up to 90 percent of their time indoors," continued Dauphinais. "When combined with exclusive 3M filtration technology, the Filtrete Smart Air Filter is a powerful and smart way to cleaner, fresher air in the home."

The Filtrete Smart App logs outdoor air quality information based on the home's location and provides tips to users on how to improve the air quality inside. Every home is a different environment, and various factors impact the lifespan of an air filter. For instance, household activities like vacuuming, cooking, and remodeling projects or the presence of pets can impact how long the air filter will last. The weather and other environmental concerns like smog and humidity also impact the air quality inside a home and may play a role in how often an air filter needs to be replaced.



# 3M'S MEDICAL TAPE TO IMPROVE WEARABLE DEVICES

When Joe's heart-rate monitor kept falling off, he asked his doctor, "Isn't there a better way to make it stick?" Thanks to 3M, there is. The company that makes everything from Post-it® Notes to structural adhesives that hold airplanes together, also makes advanced medical adhesives that can hold for up to two weeks.

When considering adhesive science and the challenges of a substrate like skin, design engineers know sticking-to-skin is trickier than you would think. With the addition of 3M™ 4076 Extended Wear Medical Tape to its extensive portfolio, 3M's Medical Materials and Technologies business has given medical device manufacturers and engineers a long-term wear, acrylic-based adhesive solution designed to increase patient comfort and provide a strong and reliable bond in challenging applications.

The non-sensitizing, conformable adhesive was developed for long-term wear, providing a bond that is firm yet comfortable so patients may not even realize they are wearing a device. This allows engineers and manufacturers to focus solely on their device's design and application, spurring innovation while ensuring their timeline and budget requirements are met.



"Sticking to skin presents a major challenge to the medical device industry," said Diana Eitzman, Ph.D., director of agile commercialization, 3M Critical and Chronic Care Solutions Division. "By equipping our customers with the latest adhesive technology, we're giving them the power to solve their toughest design challenges and positively impact patients' lives globally."

Compliant with ISO:10993 and ISO:10993-10, medical industry regulations assessing a product's potential to produce irritation and skin sensitization, 4076 Extended Wear Medical Tape is approved for use on intact skin. The tape is part of the extensive adhesives product line 3M offers the medical device manufacturing, design and supply industries. Through the company's diversity of technologies – paired with its 55 years of experience in the medical adhesive business and team of experts – 3M provides medical device professionals with the tools they need to satisfy their project requirements and confidently navigate their way to market.

# KIRIGAMI SNAKE IS A NEW SCIENTISTS PET TOY

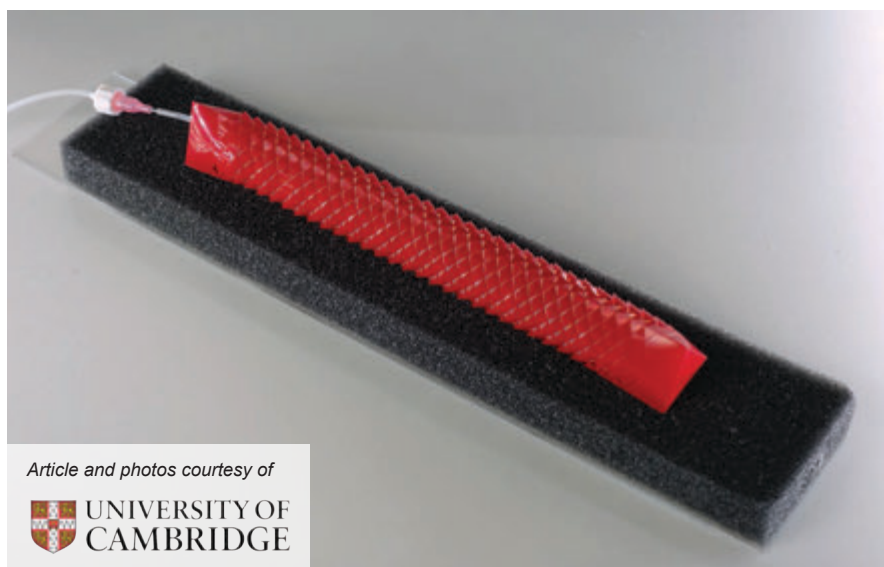
(CAMBRIDGE, Mass.) — Who needs legs? With their sleek bodies, snakes can slither up to 14 miles-per-hour, squeeze into tight spaces, scale trees, and swim. How do they do it? It's all in the scales. As a snake moves, its scales grip the ground and propel the body forward — similar to how crampons help hikers establish footholds in slippery ice. This so-called “friction-assisted locomotion” is possible because of the shape and positioning of snake's scales.

Now, a team of researchers from the Wyss Institute at Harvard University and the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) has developed a soft robot that uses those same principles of locomotion to crawl without any rigid components. The soft robotic scales are made using kirigami — an ancient Japanese paper craft that relies on cuts, rather than origami folds, to change the properties of a material. As the robot stretches, the flat kirigami surface is transformed into a 3D-textured surface, which grips the ground just like snake skin.

The research is published in *Science Robotics*.

“There has been a lot of research in recent years into how to fabricate these kinds of morphable, stretchable structures,” said Ahmad Rafsanjani, Ph.D., a postdoctoral fellow at SEAS and first author of the paper. “We have shown that kirigami principles can be integrated into soft robots to achieve locomotion in a way that is simpler, faster, and cheaper than most previous techniques.”

The researchers started with a simple, flat plastic sheet. Using a laser cutter, they embedded an array of centimeter-scale cuts, experimenting with different shapes and sizes. Once the sheet was cut, the researchers wrapped it around a tube-like elastomer actuator, which expands and contracts with air like a balloon.



When the actuator expands, the kirigami cuts pop out, forming a rough surface that grips the ground. When the actuator deflates, the cuts fold flat, propelling the crawler forward.

The researchers built a fully untethered robot, with its integrated on-board control, sensing, actuation, and power supply all packed into a tiny tail. They tested it crawling throughout Harvard's campus.

The team experimented with various-shaped cuts, including triangular, circular, and trapezoidal. They found that trapezoidal cuts — which most closely resemble the shape of snake scales — gave the robot a longer stride.

“We show that the locomotive properties of these kirigami-skins can be harnessed by properly balancing the cut geometry and the actuation protocol,” said Rafsanjani. “Moving forward, these components can be further optimized to improve the response of the system.”

“We believe that our kirigami-based strategy opens avenues for the design of a new class of soft crawlers,” said the paper's senior author Katia Bertoldi, Ph.D., an Associate Faculty member of the Wyss Institute and the William and Ami Kuan Danoff Professor of Applied Mechanics at SEAS. “These all-terrain soft robots could one day travel across difficult environments for exploration, inspection, monitoring, and search and rescue missions, or perform complex, laparoscopic medical procedures.”





# Big Ben parasols for cosy and classy evening

The Big Ben parasol is one of the most versatile and most successful products of the parasol specialist Caravita, a member of the Warema Group. Elegant in appearance, it creates a comfortable, inviting atmosphere, whether providing shade by day or as a cosy roof in the evening.

People love sitting outside from early until late in good weather. Open-air eateries and hotel terraces are popular places for guests to relax. Parasols that provide pleasant shade and add to the cosiness in the evening create a comfortable and inviting atmosphere.

Whether on the narrow terrace of a street café or in the generous pool area of an exclusive hotel resort, the Big Ben parasol by Caravita fulfils any requirements. Its strong frame has been tested in a wind tunnel, and is available in many shapes and over 50 sizes. Under the brand Big Ben Freestyle, it can be individually tailored to any situation, including a diamond or star shape. In urban settings, the shape can be adjusted to fit a wall projection. However, the parasol can also cover large open areas with its span of up to seven metres. This means it provides space for up to eight tables under one roof. Private gardens will appreciate the commercial parasol for its impressive size, attractive design and unique functions.

## Multi-function at any time of day

Yet it can do so much more than just protect against the sun. When the weather in summer is far too nice to go indoors when darkness falls, Big Ben turns night into day. With the optional light system Elegance, which is integrated unobtrusively in the struts, the evening never has to end. The LEDs can be dimmed by remote control to create a pleasant lighting ambience. And detachable radiant heaters keep things cosy and warm even later in the year. Individual weather protection is provided in combination with rain gutters and side curtains.

## About Caravita

Caravita is a member of the Warema Group, and a specialist in made-to-measure sun shades and sun sails. Since 1993 the family-owned company has been developing high-grade sun shading solutions for terraces, balconies, hotels and restaurants. The company's sales and distribution centre is in Gaimersheim near Ingolstadt in German, and its production premises are near Trencin in Slovakia.



Article and photos courtesy of  
**CARAVITA®**

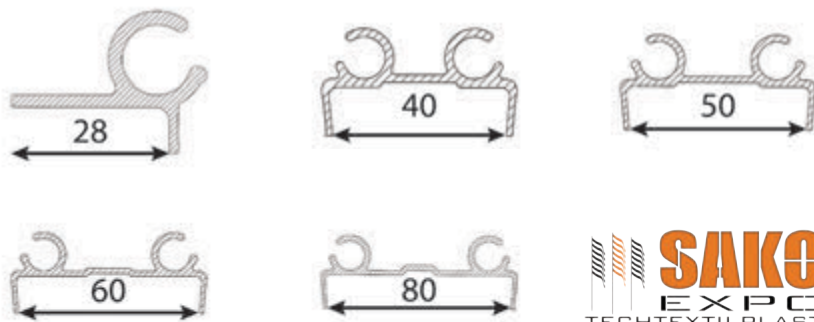
# THE ONLY PATENTED OVERLAYS ON STEEL PROFILES ON THE MARKET

The construction of a textile warehouse is a big investment that should be well thought out and planned. However, if we already know that the appropriate space for storing materials or products is essential for us, it is worth finding out what solutions are available.

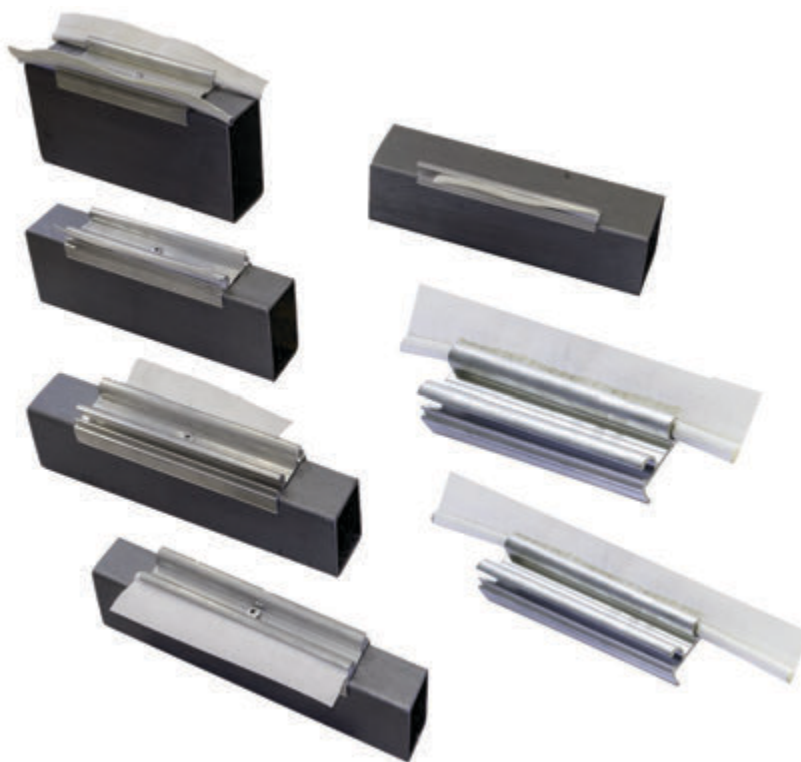
The construction of the hall requires a properly prepared area. The ground must be hardened and flat. It is a good base for the construction of metal profiles to be safe and stable.

The company Sako Expo in its offer has flame retardant PVC materials of the "Sakoplan" type with special properties for the construction of tent halls. Thanks to special protective coatings, the materials resist adverse weather conditions for much longer. A complement to the hall structures are the highly transparent foils and Kador tape (Kedra) offered especially for this purpose.

In order not to create unnecessary problems for the construction of such a hall, a patented, innovative product was introduced - aluminum overlays for steel profiles for the retraction of Kador with PVC material. It is the fruit of 25 years of the company's experience in international operations and customer demand analysis. This product can revolutionize the market for storage and non-commercial tents. The principle of montage is very simple: these pads have side slats and are snap-fitted onto steel profiles from which the tent's skeleton is built. Each cover has two recesses where the Kador tape with a PVC coating is pulled out. Construction does not require the employment of an expert, you can do yourself an economic system.



**SAKO**  
EXPO  
TECHTEXTILPLAST





Sako Expo company profiles are a perfect solution for companies dealing in the construction of warehouse halls. It is an innovative product protected by a patent, designed to provide the user with simplicity and ease in performing work. The material from which the covers are made is aluminum, so that it will not corrode. Sako Expo offers profiles of the following sizes:

for the "40" profile - 5 and 6 mb

for the "50" profile - 5 mb

for the "60" profile - 5 and 6 mb

for the "80" profile - 5 mb

And the corner cover "28" - 4 mb.

Caps, depending on the width, are suitable for small business warehouses as well as warehouses for industrial applications. Thanks to universal widths, they are an excellent material for finishing roofs of halls and tents, building light walls, exhibition stands and many other constructions. The possibilities of their use are enormous due to the dimensions adapted to the widths most commonly used for the construction of frames and structure of halls closed profiles. The overlays have side slats that spring-loaded the profile, thanks to which they stabilize it on the structure, accelerating the construction and ensuring the overcoming of large lateral pulling forces of the tarpaulin. The method of fastening to the structure is simple with rivets or self-tapping screws. For even easier assembly, we provide all accessories and materials needed to build the hall - tarpaulin material "Sakoplan", caddy tapes, material welders, rivets and tarpaulin fittings. A properly made construction ensures complete resistance to weather conditions, regardless of whether it is wind, moisture or sun, and the use of Sioen material with a fluorine-containing layer will protect the material against mold and give it self-cleaning properties. The effect of condensing water on the tarpaulin (drop-stop effect) is also eliminated, which protects the material from getting wet.





# How to promote your company abroad the best way possible?

**Are you thinking of spreading your company presence abroad?**

**Are you afraid promoting will consume a lot of money?**

**Are you unsure what you should consider?**

There are however ways that require less investment and are perfect to check the market effortlessly and decide later on once we have first foreign clients whether to spread our activities in chosen country more.

## Email marketing

It seems old but it works! It's worth being visible and easy to find by customers. We can also be more active and easily find potential customers on the internet. With email addresses, we can use email marketing and send an appropriate offer to companies from abroad. If the message is well addressed, edited and connected to the content of our offer - there is a good chance that it will interest the recipient.

## Trade fairs

The trade fairs are undoubtedly one of the best and most effective ways to directly contact potential clients. This was proven by many companies in which a significant part of the marketing budget is allocated for this purpose. However, this is not the cheapest form of promotion and undoubtedly requires us to prepare for much longer.





One of the ways to decrease the cost but still be present with the offer on chosen trade fairs is to partner with organisation which will present our offer. For textile industry its worth checking local textile organisations. Alternative way is the offer of Tetex.com which can present your products in a form of distributing your promotional materials during branch events.

## Partners

Cultural, language and distance differences are always elements that raise a lot of uncertainty in mutual relations. It is sometimes worth finding a partner who will help us in dealing with recipients from another country. If we are not sure about our own skills in relationships and direct cooperation with foreign clients, it is always worth considering the cooperation with someone who is already experienced in such work and employs native speakers of countries that are our target. Make sure your advert is free of errors and really targets your local audience.

**Tetex.com** is Europe's largest technical textiles website delivering the latest news, information, inspirations and developments for both manufacturers and clients. A rich experience and extensive knowledge makes us the leader in delivering news from the world of technical textiles. Your products or services can be made known to the whole world. Our website is visited daily by more than 1000 users and our quarterly, Tetex Magazine, is printed in 1000 copies, distributed at events and reaches technical textiles industry professionals, institutions, companies as well as individual recipients of products and services.

We work with leading international representatives from the industry, effectively helping them to increase their product awareness.



Effective advertising translates into the number of new customers. It is nothing new that the success of any business depends on effective advertising activities.

## How does effective advertising work?

Let's take a look at AIDA model. It illustrates how advertising affects consumers, presents and explains the psychological basis of it. The abbreviation comes from:

**Attention** - to attract attention

**Interest** - to interest the product

**Desire** - to trigger the desire to buy

**Action** - to stimulate the action to buy

Advertising should therefore attract the attention of a potential customer who should notice it among others. Then he should become interested in the product and focus on its main aspects (functions, benefits of purchase, etc.)

The last elements are waking up in the customer the desire to have a product and causing a reaction to the ad or purchase.

## What makes advertisement bad?

Reasons below are the main cause why your ad does not work like it should:

- **you cannot track its effectiveness (or ineffectiveness) in any sort of way**
- **its target group is too broad, when it should be more specific**
- **it is expensive to correct or improve**
- **there is no call to action in it**
- **is impersonal because it goes to everyone**

Marketing is not an easy thing, for sure. Luckily, there are companies like Tetex who are able to help us at any time. Feel free to visit us at [tetex.com](http://tetex.com)!

# EVENT CALENDAR

THE MOST IMPORTANT EVENTS FROM THE TECHNICAL TEXTILE INDUSTRY



INTERNATIONAL  
APPAREL &  
TEXTILE FAIR

## INTERNATIONAL APPAREL & TEXTILE FAIR

24-26 APRIL 2018

DUBAI

International Apparel & Textile Fair is a bi-annual event dedicated to the apparel and textile industry. The exhibition focuses on clothing, fabrics and materials for fashion, home and industrial materials. It convinces with innovative structures, mixing of materials and a variety of color palettes.



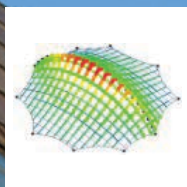
techtextil  
NORTH AMERICA

## TECHTEXTIL NORTH AMERICA

22-24 MAY 2018

ATLANTA

The events bring together product innovators, industry associations and research institutions to deliver a robust offering of networking and educational opportunities. With 500+ exhibiting companies, international media outlets and pavilions representing Germany, Italy, Taiwan, Belgium, China and Supply Chain USA to name a few, both visitors and exhibitors alike gain exposure to new opportunities and outlets to market their businesses.



## TEXTILE ROOFS 2018

24-26 MAY 2018

RHO

The main objectives of this workshop are to provide fundamental information, as well as presenting the state-of-the-art in textile roof engineering. Above all, the workshop aims to provide practical answers to real-world questions.



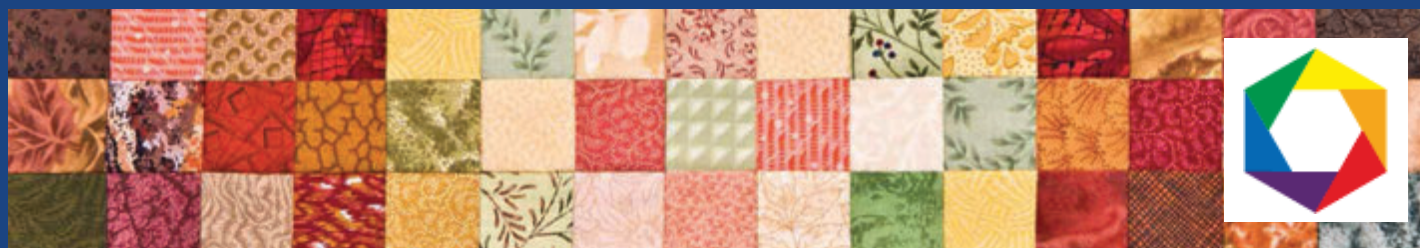
> mtex+

## MTEX+

29-30 MAY 2018

CHEMNITZ

The key topics at the exhibition are functionalised textiles, smart textiles, method and process development, manufacturing and recycling composites as well as checking, certifying and protecting from plagiarism. Well-known providers will present innovative textile solutions for protecting people and natural surroundings as well as mobile and immobile goods at a special exhibition.



## THE PATCHWORKTAGE

02-03 JUN 2018

CELLE

It offers a wide distributor road with the latest sewing and quilting machines, fabrics, yarns, embellishments and accessories and a comprehensive course program. Add to that a high-quality quilt exhibition, a daily grand raffle and a meeting of nations.





## WEAR CONFERENCE

11-13 JUN 2018

NEW YORK

The WEAR conference is the only one that treats the industry vertically from technical challenges at the fiber level to perceptions by users on embracing the technology in their lives as well as everything from standards to manufacturing resources. Some of the workshops aim to bring up areas that new businesses need to consider before rushing through development.



## THE PREVIEW 2018

28-30 AUGUST 2018

SEOUL

The Preview in Seoul offers a large variety of exhibitors from all over the world with a wide product range. The newest trends and innovations of functional textile and fashion will be shown. The fair takes place every year with free admission and offers seminars and the opportunity to visit factories.



## CINTE TECHTEXTIL CHINA

04-06 SEPTEMBER 2018

SHANGHAI

By featuring products that cover 12 different application areas, the fair creates more opportunities for participants than events with a more narrow focus, something that was appreciated by both exhibitors and buyers. Buyers praised the fair not only for its wide product coverage, but also for the quality of exhibitors and the opportunity to discover new trends and technologies.

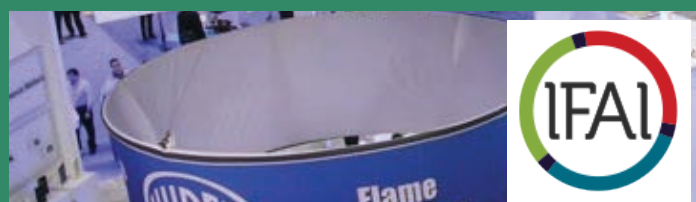


## THE TEXTECH BANGLADESH

12-15 SEPTEMBER 2018

BANGLADESH

The Textech Bangladesh is a trade fair for textile, fabrics and machines for the textile industry. It is a high-quality business platform for the textile sector, where all the experts come together to exchange information and to consult face to face with potential business partners on joint business opportunities. The exhibition is an ideal platform to learn about the latest industry trends.



## IFAI EXPO 2018

15-18 OCTOBER 2018

DALLAS, TEXAS

IFAI Expo is the largest specialty fabric trade event in the Americas. Each year, more than 5,000 high-level decision makers, industry insiders and qualified buyers meet in an unrivaled face-to-face environment, where networking brings about new opportunities.



# AVANTEX - WHEN HIGH TECHNOLOGY MEETS FASHION

**Messe Frankfurt France** is the world's leader in professional trade fairs dedicated to textiles. Its fairs attract over **19 500** exhibitors and **477 000** visitors a year and cover the entire value chain of the textile industry.

Mutations caused by technology have created a real revolution and new challenges for fashion designers: technology significantly improves fashion while serving the consumer. The event takes place on **17-20 September 2018**.

This shake-up meant new uses and ways of imagining clothing in terms of their concept and sales method. In this way, high-tech fashion has become more

democratic and more and more people interested in, because its offer is growing every day, going far beyond the world of sport and the textile offer itself.

Launched in **2015** by Messe Frankfurt in France, AVANTEX is more than just a professional trade fair. The main features of the trade:

- gathering of experts and well-known players in the industry
- covers the fashion industry from fibers to finished products
- meets the needs of the entire "Fashion Tech" range



“**CONNECTED, TECHNOLOGICAL FASHION IS THE FUTURE OF FASHION: A NEW RELATIONSHIP WITH CLOTHING AND ACCESSORIES FOR A NEW WAY TO CONSUME.**”

- proposes innovation in the center of reflection: a forward-looking fashion vision and how it will be conceived tomorrow
- where exchanges and meetings are at the heart of its philosophy
- contributes to the economy of the closed circuit

The event was lastly visited by **13 527** visitors from **107** countries.

Over **50%** of visitors come from France, Germany, Italy, Spain, Turkey, Great Britain. Exhibitors from Europe and Asia selected by a specific committee and spread according to the following nomenclature:

- **MATERIALS & COMPONENTS**
- **PROTOTYPE STUDIO**
- **CLOTHING & ACCESSORIES**
- **SMART RETAIL**
- **AVANPRINT**

We warmly invite you to take part in the event. If you call yourself a 'fashion freak', it is a must for you. The last edition of the event was a huge success and we are sure that next editions will be even better.

See you on **AVANTEX!**

Do not miss the chance to give your fashion sense an opportunity to evolve and a guarantee for some stunning outfits!




**avantex**  
PARIS



17 – 20  
сентябрь 2018 года  
Париж  
Ле-Бурже®

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- ▶ help with storage surpluses
- ▶ importing materials for special offers
- ▶ trade reports, business analysis, expert opinions



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