



# INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE

**FUNCTIONAL  
FABRIC FAIR**   
POWERED BY **PERFORMANCEDAYS**  
MUNICH | NEW YORK | PORTLAND



# WELCOME

to today's Expert Talks Live Webinar Series

**“INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE**

**An informative recap on latest developments of fabrics and treatments concerning natural fibers, renewable fibers, chemical fibers from biomass, in-yarn technologies and green treatments to inspire sustainable collection development.”**

**created for „FUNCTIONAL FABRIC FAIR“**

**powered by PERFORMANCE DAYS**

**April 13, 2021**

As sustainable fabrics, local production and gentle natural finishings are becoming increasingly important and finally, the time has come!

In recent years, fabric manufacturers have taken on special sustainable challenges and came up with fantastic developments.

I'm sure you've heard of most of those new textiles or may already be using some of them.

This webinar is designed to provide an informative overview to help you make the most time-efficient selection of the new innovative natural materials for your collection development.



The modern context of eco-design is taking over.

Fabric mills are developing a variety of creative fabrics in natural fibers & blends, light & comfortable, easy to wear & care, catering for a new demand for ease & comfort: garments for everyday wear, allowing for seamless movement from sporting activity to leisure and to work, all developed in.

Materials with a healthy aspect, using natural fibers or embedding natural ingredients in the yarns, are gaining more and more importance, especially in the sport apparel market.

## NATURAL FIBERS

### ANIMAL FIBERS

- Wool
- Merino Wool
- Alpaca
- Yak
- Cashmere
- Organic silk





## ***NATURAL FIBERS***

## **ANIMAL FIBERS**

### **WOOL / GOTS OR RWS**

#### **FUNCTIONS:**

- Mother Nature’s miracle fiber with multiple benefits
- excellent insulator and regulates the body’s temperature
- Wool will keep warm by trapping air between its fibers without overheating the wearer
- Wool is hygroscopic and hydrophobic at the same time
- Wool can easily absorb and release moisture and can absorb vapor at up to 36% of its dry weight without feeling damp or clammy
- moisture (perspiration) from the body can evaporate (wick) through the fabric

#### **ATTRIBUTES:**

- keep the skin dry and comfortable
- naturally water-repellent
- waxy cuticle of the fiber does not allow water molecules to pass
- absorbs moisture and the wick away of water prevents the build-up of bacteria
- natural anti-odor properties
- self-cleaning and dirt neutralization properties
- retains its shape, is durable and wrinkle resistant



## ANIMAL FIBERS

### MERINO WOOL

#### FUNCTIONS:

- next to skin softness
- suitable for underwear, t-shirts and long sleeves
- Merino wool offers superior stretch properties than coarser types of wool, creating an elasticity that always returns to its original natural shape
- Merino wool protects from UVA and UVB rays without any additional fabric treatment

#### ATTRIBUTES:

- Merino wool is finer than wool
- Merino wool fibers are between 14.6-24.5 microns. A micron ( $\mu\text{m}$ ) is one millionth of a meter; the finer the micron, the softer the fiber.



## ANIMAL FIBERS

### ALPACA

#### FUNCTIONS:

- Alpacas are free-running animals living at 4,000 meters (13,000 ft.) altitude in the Andes
- They are exposed to 40°C (104°F) temperature differences in the course of the same day.
- To survive, the South American Alpaca has evolved an adaptable semi-hollow fur, enabling it to remain cool in the scorching mornings and warm during the freezing nights.

#### ATTRIBUTES:

- wicking properties, transferring moisture outwards where it is spread over the surface of the fibers, accelerating evaporation
- exceptionally soft and cushioning, thus reducing friction on the skin
- Due to extreme solar radiation in the Andes, the fiber has also acquired UV resistance, protecting the skin from sun damage.



## ANIMAL FIBERS

### YAK

#### FUNCTIONS:

- The yak is a long-haired cow native to the Himalayas, Mongolia and Central Asia.
- The way it is sourced has a much lower impact on the planet.

#### ATTRIBUTES:

- Yak wool is naturally soft and warm
- 30% warmer than sheep's wool
- 1.6 times more breathable than cashmere
- odor-resistant
- anti-microbial properties



## ANIMAL FIBERS

### CASHMERE

#### FUNCTIONS:

- Cashmere wool comes from the cashmere goat, which is native to Tibet and Northern India.
- It is sorted according to its natural colors:
  - white
  - gray
  - brown
- The raw fiber is de-haired to separate the fine soft cashmere from coarse and non-usable hair.
- The fineness of each strand of cashmere is typically between 7-19 microns, with an average of 14 microns defined as an industry standard.
- This fineness gives cashmere its trademark silky texture.

#### ATTRIBUTES:

- cylindrical
- soft
- silky
- smooth
- resilient
- moisture-absorbing
- particularly warm



## ANIMAL FIBERS

### ORGANIC SILK

#### FUNCTIONS:

- In contrast to the conventional silk industry, organic silk farms do not grow their mulberry trees in monocultures, but in mixed cultures.
- no pesticides or artificial fertilizers are used in the production of organic silk
- Organic silk is also free of heavy metals and chemical treatments.

#### ATTRIBUTES:

- anti-aging properties by moisturizing the skin and accelerating the cell renewal process
- antistatic properties
- thermoregulation properties
- silk is hypoallergenic; it does not attract dust mites and is a natural fungal repellent
- natural anti-odor properties



## NATURAL FIBERS

### PLANT-BASED FIBERS

- Organic Cotton
- Kapok
- Hemp
- Linen/Flax
- Abaca (Manila Hemp/Paper Yarn)





## PLANT FIBERS

### ORGANIC COTTON

#### FUNCTIONS:

- high moisture absorbent effect of cotton generates a great cooling effect
- moisture is absorbed to the inside of the fiber, drying times are low, which can cause a chilling effect

#### ATTRIBUTES:

- soft
- stretches easily
- hypoallergenic, which is ideal for sensitive skin
- easy to wash
- won't produce static cling





## PLANT FIBERS

### KAPOK

#### FUNCTIONS:

- natural and soft silky cellulosic fiber with a significantly homogeneous hollow tube shape, offering great thermal insulation
- used as an alternative padding to down and synthetic fibers, referring to it as ‘plant-down’
- Kapok is one of the few sustainable rainforest products due to the fact that it grows naturally in the rainforest and does not require tending to and upkeep by humans.
- wild-harvested
- Kapok does not need to be treated with chemicals, naturally healthy and safe

#### ATTRIBUTES:

- strong
- durable
- naturally hypoallergenic
- anti-microbial
- dust mite-resistant
- naturally repels moisture, giving it great drying times and making it unsuitable for mold, mildew, and bacteria to thrive in



## PLANT FIBERS

### HEMP

#### FUNCTIONS:

- environmental advantages of hemp
- no necessity for irrigation & herbicides in cultivation
- Hemp is inherently antimicrobial - as little as 15% hemp combined with a neutral material such as polyester will kill 99.9% of present staph bacteria.
- In blends with cotton, it will fully inhibit further bacteria growth.

#### ATTRIBUTES:

- thermo-conductive and therefore feels very cool on the skin
- very light and strong natural fiber
- resistant to degradation from sun and salt water
- protects from UV radiation
- partially hydrophobic fiber, naturally repels water





## PLANT FIBERS

### LINEN/FLAX

#### FUNCTIONS:

- The main benefit of wearing linen is the coolness it provides during hot weather.
- excellent heat conductivity properties, as linen quickly allows heat to escape
- heat conductivity of linen (which similar to hemp) is 5 times higher than wool and 18 times higher than silk

#### ATTRIBUTES:

- excellent hygroscopic properties and can absorb up to 20% of its weight and yet still remain dry
- twice as durable as cotton
- resistance to fungi and bacteria
- naturally anti-odor
- anti-allergenic





## PLANT FIBERS

### ABACA (MANILA HEMP/PAPER-YARN)

#### FUNCTIONS:

- Known as Manila Hemp, abaca is a leaf fiber belonging to the banana plant family.
- great economic importance, being harvested for its fiber extracted from the leaf-stems
- grows without the need for large amounts of water or pesticides
- helps stop erosion, and is being used to replace fossil fuels in clothes
- fibers are pulped and then made into a thin but strong paper
- paper is then cut into thin strips and twisted into a fine yarn

#### ATTRIBUTES:

- one of the strongest natural fibers
- soft
- very lightweight
- antibacterial properties
- thermoregulation properties
- moisture control properties
- naturally protects from UVA and UVB





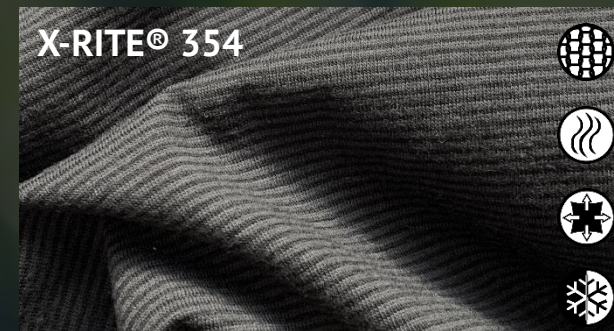
## NATURAL FIBERS

## RECYCLED NATURAL FIBERS

- Recycled Cotton
- Recycled Wool
- TENCEL™ REFIBRA™



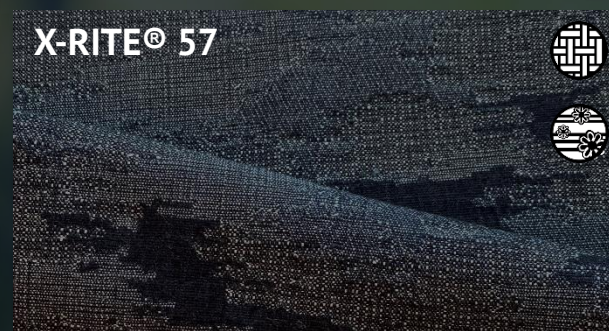
# NATURAL FIBERS



**CONCEPT III TEXTILES**  
JCW013

Natural Striped Baselayer  
155g  
51% Wool, 49% Cotton

*Cotton wool stripe jersey, produced by  
ABMT Textiles in Melbourne, Australia*



**MERRYSON CORP.**  
T11282

Woven Denim Jaquard  
300g  
100% Organic Cotton

*Woven Denim Jaquard, with Broken effect by  
Weaving*



**HEMP FORTEX INDUSTRIES**  
HG09141

Plain Denim Weave  
339g  
63% Hemp, 37% Organic Cotton

The Plain Denim weave made form a hemp  
cotton combination, fully inhibits  
bacteria growth.



**DESIGNER TEXTILES**  
5089

Interlock with Birdseye structure  
210g  
31% TENCEL™, 69% Wool Merino

This is an 19.3 micron Merino Wool and  
TENCEL™ interlock with Birdseye structure.  
The Merino fibers are dyed, while the  
TENCEL™Fibers are left undyed to create  
the Bridseye effect. This fabric is made from  
100% natural, renewable and  
biodegradable fiber.



## RENEWABLE FIBERS

- RAYON / MODAL
- TENCEL™
- TENCEL™ REFIBRA™



## NATURAL POLYMERS MADE OF REGENERATED CELLULOSE

### RAYON / MODAL

#### FUNCTIONS:

- Rayon is a manufactured fiber made from natural sources such as wood and agricultural products that are regenerated as cellulose fiber.
- It is therefore not considered to be synthetic. Rayon is made from purified cellulose, harvested primarily from wood pulp, which is chemically converted into a soluble compound.
- It is then dissolved and forced through a spinneret to produce filaments, which are chemically solidified, resulting in fibers of nearly pure cellulose.
- Modal is a form of rayon, another plant-based textile, though it is slightly more durable and flexible than the standard version.

#### ATTRIBUTES:

- High moisture-wicking abilities
- Very breathable



## NATURAL POLYMERS MADE OF REGENERATED CELLULOSE

### LYOCELL / TENCEL™ / TENCEL™ REFIBRA™

#### FUNCTIONS:

- Lyocell is a form of rayon that consists of cellulose fiber made from dissolving pulp
- In contrast to viscose, it is produced from dissolving pulp, which contains cellulose in high purity.
- The amine oxide used to dissolve the cellulose and set the fiber after spinning is recycled. 98% of the amine oxide is recovered.
- Lyocell by Lenzing – TENCEL™ is made of sustainable sourced quick growing eucalyptus trees and their REFIBRA™ Technology – TENCEL™ REFIBRA™ – includes the recycling of pre-consumer cotton waste in the production process (cutting waste from garment making).

#### ATTRIBUTES:

- very soft
- breathable
- light
- excellent for sensitive skin
- high moisture absorbency
- drying times and breathability compared to cotton
- elasticity and strength make it perfect for the use in sportswear



## RENEWABLE FIBERS



### CARVEMA TEXTIL IDA (BLOOMATI)

JER.031.0100

Cooling Baselayer  
143g  
100% TENCEL™

Fabric with “Cool Summer Touch” treatment that adds to the fabric a very soft, fresh touch and an effect of sophistication and gracefulness, with a low degree of pilling, ideal for delicate and fresh clothing.



### CARVEMA TEXTIL IDA (BLOOMATI)

JER.060.0152

Soft silky Single Jersey  
183g  
33% Cotton, 32% TENCEL™ REFIBRA™,  
32% Lyocell

The fabric has a ecologically sustainable finishing that provides a feeling of comfort and hydration which helps fight against dry skin. The “Luxury Care” is designed as a concentrated softener that has at the base of its composition argan oil, which gives great softness, an elegant touch and a silk effect to the knitting.



### STOTZ & CO AG

VENTILE ECO 290

Natural Outerfabric  
290g  
30% Linen, 70% TENCEL™

Lyocell / Linen blend in combination with a PFC-free water repellent finish.



### LMA – LEANDRO MANUEL ARAÚJO

P0597/19

Organic Brushed Sweater  
330g  
42% Cotton, 58% Viscose

Natural Brushed Sweater Fabric avoiding microplastic shredding in the environment.



## ECOLOGICAL MAN-MADE FIBERS

- Milk fibre
- Soy silk
- Artificial spider silk
- Castor Oil
- Coffee-Oil



## POLYMERS MADE OF GENERATED PROTEIN FIBERS

### MILK FIBER

#### FUNCTIONS:

- Milk protein fibers are synthetically produced from the milk »casein«.
- Originally, milk fibers were not manufactured in a particularly eco-friendly manner, nowadays the milk fiber QMILK® is developed from the casein of non-food milk (food waste) in a more eco-friendly and sustainable process by using the by-product of milk production, and refraining from the use of chemicals. To gain 1kg of QMILK® fiber, only 2 liters of water are required, whereas in contrast, 10,000-25,000 liters of water are needed in order to get 1 kg of cotton.

#### ATTRIBUTES:

- 100% natural
- soft and smooth
- temperature regulation properties
- natural antibacterial effect
- high hydrophilicity
- skin friendly and ideal for wearers with sensitive skin
- completely biodegradable
- ideal combination for a wide variety of material mixes made of natural or synthetic fibers, and improves the product properties by up to 20%



## POLYMERS MADE OF GENERATED PROTEIN FIBERS

### SOY SILK

#### FUNCTIONS:

- Soy fabric is a fabric made from the hulls of soybean, essentially a by-product of the tofu manufacturing process – waste of tofu production.
- It is often referred to as »vegetable cashmere« or »soy silk« due to its properties.
- Soy protein is liquified and then extruded into long, thin filament that are then cut and processed.
- The process does involve the use of chemicals, but they are mostly recovered and can be reused.

#### ATTRIBUTES:

- breathable
- smooth as silk
- skin friendly properties thanks to its moisturizing amino acids
- biodegradable



## POLYMERS MADE OF GENERATED PROTEIN FIBERS

### ARTIFICIAL SPIDER SILK

#### FUNCTIONS:

- Silk from spiders has pretty impressive properties. It is one of the sturdiest materials found in nature, stronger than steel and tougher than Kevlar. It can be stretched several times its length before it breaks.
- For these reasons, the replication of spider silk developed in labs has been of highest interest for material scientists for decades.
- Man-made spider silk is based on artificial spider proteins generated by bacteria and then spun to a high-performance yarn.

#### ATTRIBUTES:

- controlled moisture management
- 100% biodegradability.



## POLYMERS MADE OF GENERATED PROTEIN FIBERS

### CASTOR OIL

#### FUNCTIONS:

- Bio-based nylon yarns & nylon membranes made from castor oil are a totally renewable resource that does not require high amounts of water nor subtracts arable land for food uses.
- The biomass source is castor bean, *Ricinus Communis*.
- The monomers used in the polymerization are partially or completely sourced from castor oil.

#### ATTRIBUTES:

- Italian company Fulgar has developed a bio-based nylon EVO®
  - ultra-light
  - super stretchy
  - ensures maximum comfort
  - intense eco-awareness.
- KingWonder – a Chinese brand – developed a high performance elastic lightweight membrane named »PEBAX Rnew«, also based on castor oil:



## POLYMERS MADE OF GENERATED PROTEIN FIBERS

### COFFEE-OIL

#### FUNCTIONS:

- Nylon membranes can also be made partly out of coffee oil.
- The AIRMEM™ membrane from S.Café® replaces 25% of fossil fuels with coffee oil extracted from coffee grounds.

#### ATTRIBUTES:

- As a sustainable alternative, the coffee membrane provides twice the amount of odor control compared to standard membranes.



## ECOLOGICAL MAN-MADE FIBERS



**SINGTEX®**  
SCW-741

Woven Outdoor Pants  
132g  
100% recycl. Polyester

*SINGTEX® S.LEISURE™ is a supreme standard for comfort fabrics that offers stretch-ability and flexibility to the wearer while minimizing the impact to the environment.*

*Upgradeable with S.Café patented technology.*

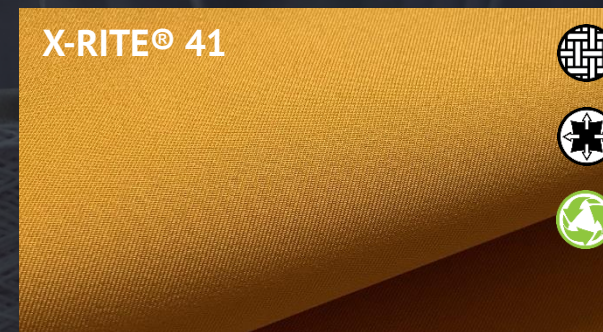


**SINGTEX®**  
SCK-3568

Heavy Single Jersey  
220g  
100% Polyester

*SINGTEX® S.LEISURE™ is a supreme standard for comfort fabrics that offers stretch-ability and flexibility to the wearer while minimizing the impact to the environment.*

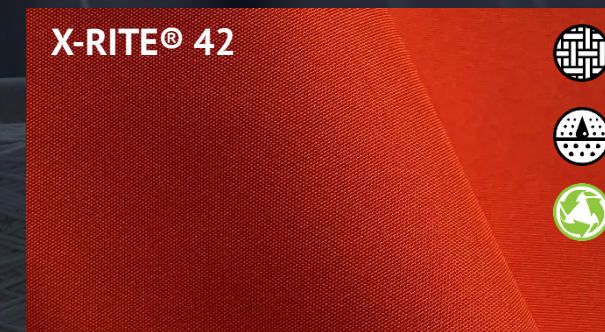
*Upgradeable with S.Café patented technology*



**LONG ADVANCE**  
LPW-19027-Z92

2Layer Jacket Fabric  
161g  
100% Polyester

*A bio-degradable Polyester call “GREENONE” is used on this fabric. The fabric keep the same properties as virgin polyester, can be cared for in their usual manner. The anaerobic degradation bio-degraded under landfill. The membrane on the back is a bio-based material.*



**LONG ADVANCE**  
LPO-19001-Z92

2Layer Jacket Fabric  
200g  
100% Polyester

*A bio-degradable Polyester call “GREENONE” is used on this fabric. The fabric keep the same properties as virgin polyester, can be cared for in their usual manner. The anaerobic degradation bio-degraded under landfill. The membrane on the back is a bio-based material.*



## **EMBEDDED INGREDIENTS WITH ADDED FUNCTIONS FROM NATURE**

Most of the natural additives can be embedded in synthetic as well as in natural man-made fibers e.g. cellulose-based Viscose or Lyocell. The »In Yarn Naturals« have a more durable performance. You can find: Plant-based, organic- & mineral-based ingredients embedded in the fiber as well as for use in natural finishings.



## IN-YARN TECHNOLOGIES

### PLANT-BASED INGREDIENTS

- Roasted Coffee Grounds
- Algae/ Seaweed
- Caffeine
- Aloe Vera
- Argan Oil

### ORGANIC- & MINERAL BASED INGREDIENTS

- Oyster Shell
- Ocean Collagen
- Jade
- Activated Carbon



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

*IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING*

## PLANT-BASED INGREDIENTS

### ROASTED COFFEE GROUNDS (CONSUMER WASTE OF COFFEE)

#### FUNCTIONS:

- The coffee bean swells while being roasted, which means that the space inside the bean expands.

#### ATTRIBUTES:

- micropores of roasted coffee grounds absorb odors and reflect UV-rays
- In their S.Café® fabric technology, Singtex integrates coffee grounds into the surface of polyester yarn, changing the characteristics of the filament, offering up to 200% faster drying times compared to cotton.



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING

## PLANT-BASED INGREDIENTS

### ALGAE/SEAWEED

#### FUNCTIONS:

- The substances found in seaweed hydrate the skin and help to activate cell regeneration, which in turn can help to relieve skin diseases, reduce inflammation and soothe itchiness.
- Ingredients of Seaweed are for example embedded in **SeaCell™LT and MT** – a Lyocell-based wellness fiber using raw and organic algae from Iceland.
- The collect of seaweed is certified as sustainable harvesting.
- The natural moisture level of the skin enables an active exchange of those beneficial substances between the fiber and the skin, providing a noticeable sense of wellbeing.

#### ATTRIBUTES:

- Seaweed is pure and rich in essential substances such as
  - vitamins
  - trace elements
  - amino acids
  - minerals
- high level of antioxidants protects the skin against harmful free radicals, which damage our skin cells.



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

*IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING*

## PLANT-BASED INGREDIENTS

### CAFFEINE

#### FUNCTIONS:

- Caffeine can dehydrate fatty cells.
- This minimizes the appearance of cellulite.
- The antioxidants contained in caffeine can attack these free radicals and eliminate them.

#### ATTRIBUTES:

- faster drying capacity



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING

## PLANT-BASED INGREDIENTS

### ALOE VERA

#### FUNCTIONS:

- The functional fabric brand M.I.T.I spa has created, for example, a fabric collection with embedded natural ingredients such as aloe vera and caffeine by using the cosmetic fibers from **NOVAREL®**.
- They combine the benefits of compression with the functions derived from the embedded natural extracts in the yarn, e.g. by combining the compression of a high stretch warp knit fabric with molecules of caffeine to help control the orange peel effect and cellulite.

#### ATTRIBUTES:

- soothing and anti-microbial properties of aloe vera help to disinfect wounds
- help to heal sunburn.
- hydrating properties
- source of vitamins C and E
- help protect the body against potential harm from free radical molecules
- promotes the production of collagen to keep skin healthy
- anti-aging properties
- provides the fabric a soft touch, with silky features



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

*IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING*

## PLANT-BASED INGREDIENTS

### ARGAN OIL

#### FUNCTIONS:

- Originating from the fruit of the argan spinosa tree from Morocco, argan oil contains vitamin E and fatty acids.

#### ATTRIBUTES:

- skin protection
- hydration of dry skin



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

*IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING*

## ORGANIC- & MINERAL BASED INGREDIENTS

### OYSTER-SHELL (FOOD WASTE)

#### FUNCTIONS:

- The so-called »seawool« fabric is made from upcycled oyster shell, which is sustainably collected from oyster farms in Taiwan, and embedded in recycled polyester from PET bottles.

#### ATTRIBUTES:

- naturally prevents odor caused by bacteria growing on the fabric
- antistatic
- soft touch
- provides natural insulation, keeping the body warm in cold temperatures



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

*IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING*

## ORGANIC- & MINERAL BASED INGREDIENTS

### OCEAN COLLAGEN

#### FUNCTIONS:

- The Taiwanese textile company **UMORFIL®** has created a fiber out of recycled fish scale food waste and upcycled it into textile ingredients, creating at the same time a skin-friendly material suitable for hypoallergenic skin.
- The collagen peptide of the recycled fish scales can be embedded in polyester (Umorfil® T), in nylon (Umorfil® N6®) and in viscose (Umorfil® Beauty Fiber®).

#### ATTRIBUTES:

- Ocean collagen peptide made of upcycled fish scale (food waste) has:
- moisturizing properties
- hypo-allergenic properties
- natural deodorizing properties



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

*IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING*

## ORGANIC- & MINERAL BASED INGREDIENTS

### JADE

#### FUNCTIONS:

- Jade has very low thermal conductivity, meaning it absorbs heat very slowly and would take a long time to warm up even in hot conditions.

#### ATTRIBUTES:

- fabrics featuring jade can remain cool, relative to your body, for an extended period of time.



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

*IN-YARN TECHNOLOGIES – YARNS WITH ADDED COMFORT FOR HEALTH & WELL-BEING*

## ORGANIC- & MINERAL BASED INGREDIENTS

### ACTIVATED CARBON

#### FUNCTIONS:

- Activated carbon with its billions of micropores, has a very huge »internal surface«.
- It can be applied on the surface of the fabric by direct application and also by embedding the particles into the fiber.
- Activated carbon can be generated from various raw materials such as wood, coal, coconut or also rice husk.
- It is a natural renewable resource derived mostly from food waste.

#### ATTRIBUTES:

- remarkable moisture absorption properties
- remarkable odor control properties
- keeps clothes comfortable, fresh and odor-free



## ORGANIC- & MINERAL BASED INGREDIENTS

### TRIPOROUS

#### FUNCTIONS:

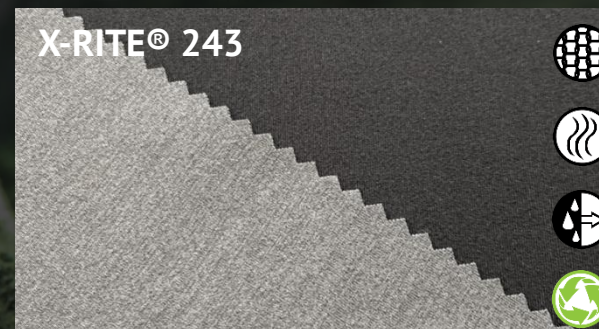
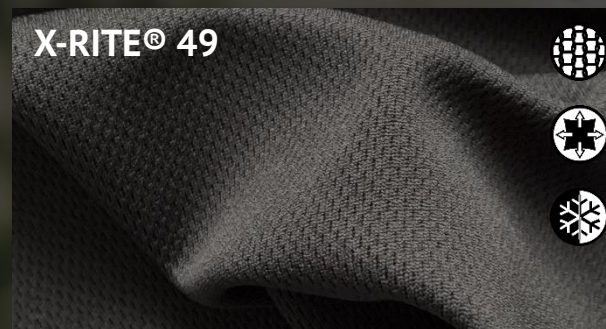
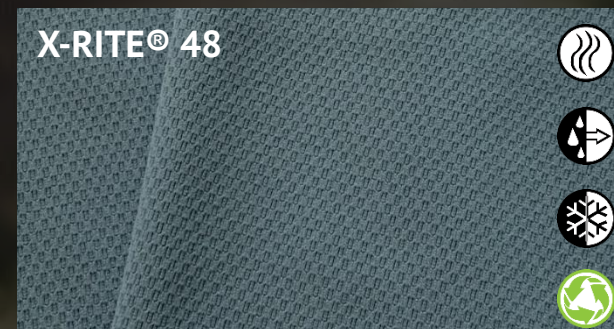
- Triporous is a porous carbon material with a unique microstructure made from rice husk, a by-product of food production.
- In addition to micropores (2 nm or less) found in conventional activated carbon, many mesopores (up to 50 nm) and macropores (50 nm or more) that are larger than the micropores are present in a complex form.
- This allows the material to deliver the property of easily adsorbing large molecular weight substances, which up to now was difficult with conventional materials.

#### ATTRIBUTES:

- By combining triporous powder and rayon, triporous can be made into a fiber for long lasting deodorizing.



## IN-YARN TECHNOLOGIES



### LONG ADVANCE LA-19183-104

SeaWool™ Baselayer  
157g  
48% Polyester, 52% SeaWool™

The oyster shell which naturally contains minerals that makes the yarn have anti-odor, moisture management and quick dry properties. The raw material of SeaWool™ is recycled PET bottles and oyster shell powder. It has exceptional warmth, and environment friendly components from the ocean and post consumer product as the perfect example of Circular Economy.

### LONG ADVANCE LA-18163-117

Cooling Single Jersey  
140g  
48% Polyamide, 52% Polyester

Jade has very low thermal conductivity, meaning it absorbs heat very slowly and would take a long time to warm up even in hot conditions. Therefore, fabrics featuring jade can remain cool, relative to your body, for an extended period of time.

### GAC Corp. KD2NT997

Collagen Baselayer  
220g  
52.5% Polyamide, 12.5% Elasttan/Spandex,  
35% UMORFIL®

This fabric is a beautiful blend of nylon, elastane and Umorfil®. Umorfil® is the collagen yarn originating from recycled fish scale. Umorfil® provides superior skin care alongside other properties such as anti-odor, anti-static and others. It is extremely soft and suitable for sensitive skin.

### CHICHAMPE FABRICS OLKN40280PS001

Two-layer Soft Single Jersey  
280g  
19% TENCEL™, 4% Elastan/Spandex,  
67% Viscose,  
10% Lyocell (smartcel™ sensitive)

This cellulose fabric is naturally moisture-wicking due to its unique blends of the dual-layer. The outer layer made from natural zinc lyocell fiber provides natural UV protection and odor-inhibiting property. The inner layer with sustainable hydrophobic cellulose fiber transports moisture outwards, making the body dry while keeping the moisturizing property of cellulose fibers.



## **GREEN TREATMENTS – NATURAL FINISHINGS**

**Natural ingredients with surface application on the yarn or fabric. The advantage of surface treatments is the simple post-application on the finished product, in contrast to embedded technology in the yarns**





## GREEN TREATMENTS – NATURAL FINISHINGS

- Wicking
- Softness
- Water Repellency
- Anti-Odor





## **SWISS COMPANY “BEYOND SURFACE TECHNOLOGIES AG**

**Beyond Surface Technologies (BST) is a Swiss-based textile chemical producer with the goal to advance green chemistry in textile finishing applications without compromising on performance. Founded in 2008, BST typically works with renewable materials, such as plant seed oils, micro algae oils and bio waste streams, in order to decrease the carbon footprint as well as to lower the hazard potential of textile chemicals.**

**The american outdoor company Patagonia invested in 2013 in Beyond Surface Technologies, to support them to achieve their goal: combine performance and technology with an eco-design.**



SWISS COMPANY “BEYOND SURFACE TECHNOLOGIES AG”

## miDori® WA 1.0 – bioWick with algae

The first microalgae-based wicking finish for synthetic textiles

### BENEFITS:

- A revolutionary wicking finish for high performance textiles.
- Innovative formular provides excellent durability and fast-drying properties, achieving state-of-the-art performance.
- Performance comparison with bioWick product miDori® WP3.0 (Pant Seed).
  - 6-10% faster wicking \*based on product testing of 25 different PES fabrics.
  - 0-5% faster wicking \*based on product testing of 15 different PA fabrics.

### MADE FROM:

100% microalgae oil, first-ever in the industry. Microalgae oil is GMO free. Extracted from dried microalgae biomass which has been grown in controlled, sealed environments.

### SUITABLE FOR:

Excellent for synthetic fabrics.

### SUSTAINABILITY:

- Up to 80% CO<sub>2</sub> reduction vs. Similar performing, synthetic standard products.
- GreenScreen Certified, Bronze
- Biocarbon content of 94%
- LCA on CO<sub>2</sub> footprint
- Lowest miDori® carbon footprint!

### CERTIFICATIONS:

- USDA Certified Biobased Product
- GOTS 5.0
- ZDHC Listed
- Screened Chemistry
- LCA



SWISS COMPANY “BEYOND SURFACE TECHNOLOGIES AG”

### miDori® WP 3.0 – bioWick with plant seed

Wicking and drying finish for synthetic textiles made from plant seed oil.

#### **BENEFITS:**

- A finishing technology for synthetic textiles that has high wicking power and is fast-drying
- Innovative formula that elevates textile performance and provides excellent durability

#### **MADE FROM:**

100% plant seed oil

#### **SUITABLE FOR:**

Excellent for synthetic fabrics

#### **SUSTAINABILITY:**

- Up to 70% CO<sub>2</sub> reductions vs. Similar performing, synthetic standard products.
- 94% biocarbon content
- LCA on CO<sub>2</sub> footprint

#### **CERTIFICATIONS:**

- GOTS 5.0
- ZDHC Listed
- Screened Chemistry
- LCA



SWISS COMPANY “BEYOND SURFACE TECHNOLOGIES AG”

### miDori® DP 1.0 – bioDry

An eco-friendly wicking for cotton that is soft, cool and re-hydrating

#### BENEFITS:

- Combines two critical performance attributes for cellulosic fabrics and blends: **wicking and softness**
- Enhanced comfort that maintains the softest quality and dry comfort of your cotton and blends
- Multi-purpose fabric softener for denim, bottoms, knits, shirts, etc.

#### MADE FROM:

Plant-seed based oils and palm oil-free active ingredients

#### SUITABLE FOR:

Cotton, blends and regenerated cellulose such as TENCEL™ and TENCEL™ Lyocell

#### SUSTAINABILITY:

- Up to 60% CO<sub>2</sub> reduction vs. Similar performing, synthetic standard products.
- GreenScreen Certified, Silver – the first chemical to obtain silver status
- 76% biocarbon content
- LCA on CO<sub>2</sub> footprint

#### CERTIFICATIONS:

- GOTS 5.0
- ZDHC Listed
- Screened Chemistry
- LCA



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

GREEN TREATMENTS – NATURAL FINISHINGS

SWISS COMPANY “BEYOND SURFACE TECHNOLOGIES AG”

## miDori® SP 3.0 – bioSoft

A soft and smooth finish for all fibers

### BENEFITS:

- Lightweight, multipurpose formula
- Enhances comfort and wear
- Soft and breathable, with a smooth hand

### MADE FROM:

Plant-seed based active ingredients and components from bio-waste streams

### SUITABLE FOR:

Any fiber type including blends

### SUSTAINABILITY:

- Up to 60% CO<sub>2</sub> reduction vs. Similar performing, synthetic standard products.
- C2C Platinum, the highest standard in Cradle to Cradle Certified™ product design
- GreenScreen Certified, Silver
- 72% biocarbon content

### CERTIFICATIONS:

- USDA Certified Biobased Product
- GOTS 5.0
- ZDHC Listed
- Screened Chemistry
- C2C Platinum



# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”

GREEN TREATMENTS – NATURAL FINISHINGS

SWISS COMPANY “BEYOND SURFACE TECHNOLOGIES AG”

## miDori® RP 2.0 – evoPel

A PFC-free, durable water-repellent for all fibers

### BENEFITS:

- High performance and durability that protects fabrics from rain and water-based stains
- Does not use PFCs (perfluorinated chemicals), which has toxic effects on the health of humans and animals if released into our waterways.
- Versatile and environmentally-friendly solution

### MADE FROM:

Partially-based plant seed, renewable sources, and Bluesign® certified components.

### SUITABLE FOR:

Any fiber type

### SUSTAINABILITY:

- 55% biocarbon content
- Bluesign® listed

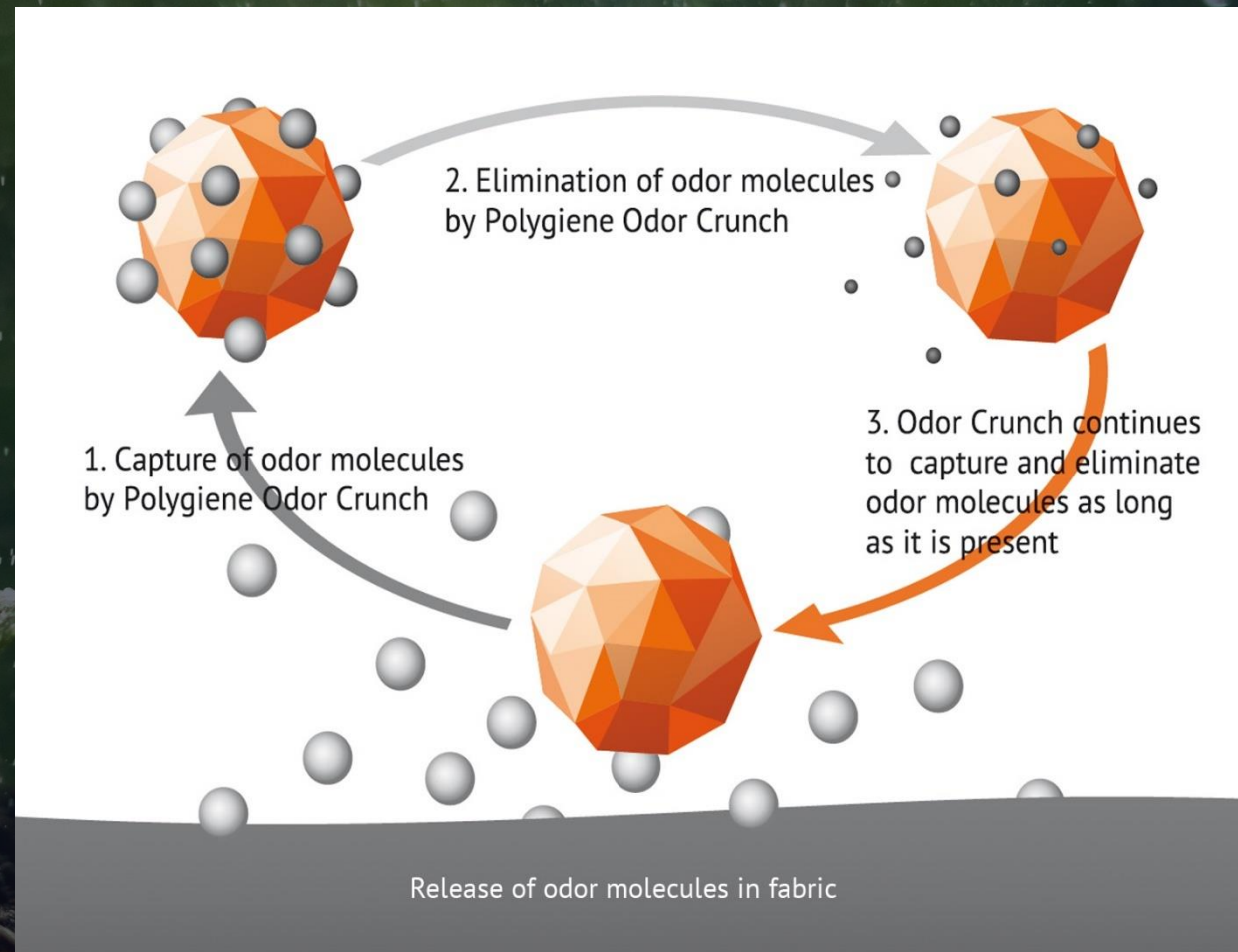
### CERTIFICATIONS:

- GOTS 5.0
- ZDHC Listed
- Bluesign®



## ANTI-ODOR

- Catalyzed silica captures and breaks down unpleasant odors
- **Polygiene Odor Crunch®** technology consists of silica, the main ingredient in sand, modified with a unique catalyst
- The odor molecules will first stick to the modified silica particles in Odor Crunch.
- Once the odor molecules are adsorbed, they will be catalytically then cracked and broken down and the offensive odor is permanently eliminated.
- Polygiene Odor Crunch® Technology is free of biocides.





# “INNOVATIVE PERFORMANCE OF NATURE IN TEXTLE”

## SOURCES

The source for all pages marked with ( \*1) is:

<https://www.performancedays.com/loop/focus-topic/2020-04-inspired-by-nature.html>

The source for all pages marked with ( \*2) is:

<https://www.performancedays.com/loop/focus-topic/2019-11-green-evolution.html>

Further sources:

<https://www.beyondst.com/kopie-von-concept>

<https://polygiene.com/odor-crunch/>





Closure:

I hope I could give you some useful information and inspiration for the journey of your company.

That's all the time we have for today.

Thank you very much for attending today's webinar:

**“INNOVATIVE PERFORMANCE OF NATURE IN TEXTILE”**

You should receive the recording of the webinar later on and if I did not get a chance to answer your questions, please don't hesitate to contact me via email at [alexa.dehmel@active-sports-design.com](mailto:alexa.dehmel@active-sports-design.com) or at [www.active-sports-design.com](http://www.active-sports-design.com).

As a reminder, please sign up for the Functional Fabric Fair powered by Performance Days newsletter to receive more curated material stories and to be updated on our future webinars. You can learn more by visiting [www.functionalfabricfair.com](http://www.functionalfabricfair.com).

Thanks again and I look forward to connecting with you all again, very soon!