

NEWS RELEASE

Teijin Frontier's New Breathable Material Adapts to Perspiration

Tokyo, Japan, December 7, 2021 --- [Teijin Frontier Co., Ltd.](#), the [Teijin Group's](#) fibers and products converting company, announced today that it has developed a highly comfortable knitted fabric that responds to perspiration by changing its structure three-dimensionally, thereby increasing breathability and eliminating the feeling of stuffiness.

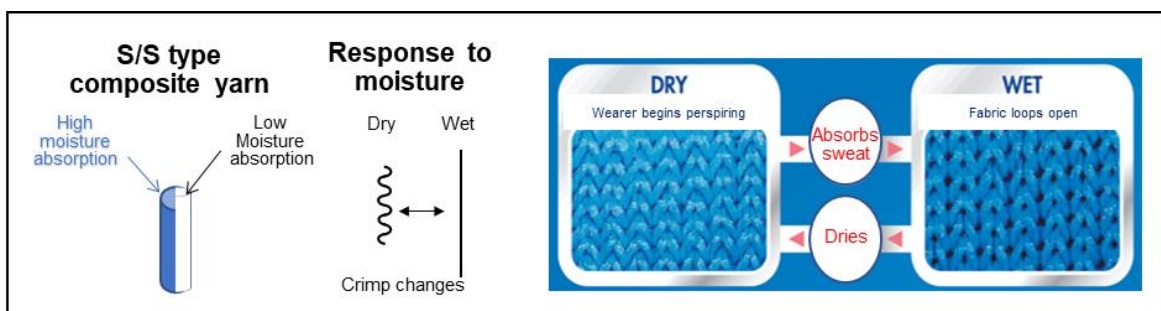
Teijin Frontier will market its new self-adjusting fabric as a core product for year-round sports and outdoor use beginning in fiscal 2023. Wide ranging of applications will include casual and functional apparel and uniforms as well as various materials. The company expects to target sales of 250 thousand meters in fiscal 2024.



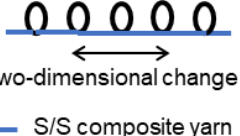
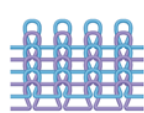
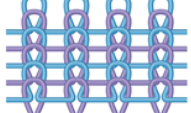

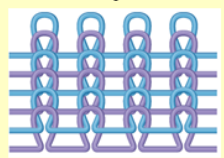
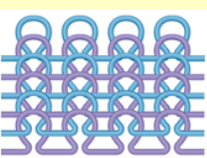
Sample product made with new self-adjusting knitted fabric

Teijin Frontier's new self-adjusting fabric has a solid knitted fabric structure that changes shape in three directions in response to perspiration thanks to its specially textured, side-by-side (S/S) composite yarn made from two types of polymers, each with different hygroscopicity. The yarn's structure also includes a coiled crimp.

Adaptive changes in crimps and stitch opening/closing



Adaptive changes due to perspiration

Existing adaptive fabric	<p>• Flat structure</p>  <p>Two-dimensional change</p> <p>— S/S composite yarn</p>	<p>Dry</p>  <p>Wet</p>  <p>Loops get wider and fabric size changes greatly</p>
New adaptive fabric	<p>• Solid structure</p>  <p>Three-dimensional change</p> <p>— Specially textured S/S composite yarn</p>	<p>Dry</p>  <p>Wet</p>  <p>Loops get wider but fabric size changes minimally</p>

Technical properties of new adaptive fabric

Spinning	<ul style="list-style-type: none"> - Side-by-side composite yarn made with two polymers, each with different hygroscopicity - Specially textured yarn combines side-by-side composite and ultra-fine crimped yarns
Knitting	<ul style="list-style-type: none"> - Special solid knitted fabric with a three-dimensional yarn structure - Excellent wind protection due to high-density knitted design (ventilation volume: 50cc/cm²/sec or less)
Dyeing	<ul style="list-style-type: none"> - Dyeing technology contributes to adaptive function - Quality-control technology enhances breathability, dimensional changes and quality

Features of new adaptive fabric

Functionality	<ul style="list-style-type: none"> - Highly adaptive breathability (about double that before sweating) - Minimal dimensional changes (5% or less both vertically and horizontally) - Excellent wind protection (ventilation rate of 50cc/cm²/sec or less) - Soft texture and attractive appearance - Combines with materials offering balanced functions or those for preventing sweat stains, sweat-induced chill or body odor
Eco-friendliness	<ul style="list-style-type: none"> - Combines with recycled polyester - Adaptive breathability contributes to energy saving

In 2009, Teijin Frontier began offering a S/S composite yarn made with polymers of varying hygroscopicity and fabric in which the stitches open and close in response to perspiration. However, since the fabric's stitches open wide in the presence of perspiration, causing clothing sizes to change significantly, it was necessary to limit stitch opening to a practical level for commercial applications.

About the Teijin Group

Teijin (TSE: 3401) is a technology-driven global group offering advanced solutions in the fields of environmental value; safety, security and disaster mitigation; and demographic change and increased health consciousness. Originally established as Japan's first rayon manufacturer in 1918, Teijin has evolved into a unique enterprise encompassing three core business domains: high-performance materials including aramid, carbon fibers and composites, and also resin and plastic processing, films, polyester fibers and products converting; healthcare including pharmaceuticals and home healthcare equipment for bone/joint, respiratory and cardiovascular/metabolic diseases, nursing care and pre-symptomatic healthcare; and IT including B2B solutions for medical, corporate and public systems as well as packaged software and B2C online services for digital entertainment. Deeply committed to its stakeholders, as expressed in the brand statement "Human Chemistry, Human Solutions," Teijin aims to be a company that supports the society of the future. The group comprises more than 170 companies and employs some 20,000 people across 20 countries worldwide. Teijin posted consolidated sales of JPY 836.5 billion (USD 7.7 billion) and total assets of JPY 1,036.4 billion (USD 9.5 billion) in the fiscal year that ended on March 31, 2021.

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