

Contributing to Comfortable Lifestyles through Our Eco-Friendly Products with Enhanced Quality

The Suminoe Textile Group has continued to operate for 135 years, not only in the interior business but also in other business domains. Throughout its history, the Group has produced new products while meeting the demands of the times and customer needs, thereby contributing to enriching people's everyday lives. This feature story introduces the technologies and quality that our Group is proud to offer.



Carpets Made from Recycled Resources

ECOS® recycled carpet tiles produced using horizontal recycling technology

Toward establishing a new standard—**“double-recycling”**

The ECOS® series, launched in May 2011, has further evolved to become more environmentally friendly. Some ECOS® products have realized “double recycling” by reusing resources collected from the market, for both their surface and backing materials.

Recycled material ratio of **84%** Achieved the world's top-level recycled material ratio

The ratio of recycled materials in most recycled carpet tiles in the market ranges from about 25% to a little over 40%. However, ECOS® has achieved a recycled material ratio of up to 84%.*

*In the case of ECOS® iD-8100.

CO₂ reduction of **43%** Substantially reducing CO₂ emissions as compared to conventional products

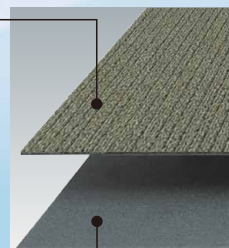
The SG-500 series uses スミロン® (SUMITRON), which is made from recycled PET bottles. The lifecycle assessment (LCA) results show that the series has reduced CO₂ emissions by up to 43%.*

*As compared to Suminoe's conventional products



[Surface material]

*In the case of ECOS® iD-8100
The iD-8100 uses ECONYL® yarns made with 100% regenerated nylon, which AQUAFIL S.p.A. has succeeded in mass producing. These yarns are produced by collecting and recycling used fishing nets, etc.



[Backing material]

Through our proprietary recycling technology, we have realized recycling of used carpet tiles into the backing material for new products, while also achieving the same cost performance level as virgin tiles.

Eco-friendly Yarn Made from PET Bottles

スミロン® (SUMITRON) continuous fiber made from recycled PET bottles

The continuous fiber yarn スミロン® (SUMITRON) is produced in the Shiga Factory of Suminoe Techno Co., Ltd. Made by melting and spinning polyester chips, the yarn excels in stain- and light-resistance.



Rug using スミロン® (SUMITRON)

[Features]

● Environmentally friendly

Uses 50% chips recycled from used PET bottles

● Stain-resistant

Since it is made of polyester, the yarn is stain-resistant.

● Light- and heat-resistant

Mass pigmentation provides the yarn with excellent light- and heat-resistant properties.

● Bulked yarn

Random crimps produced through the three-dimensional processing gives the yarn a bulky feel.

スミロン® (SUMITRON) has been certified to bear the recommendation mark of the Council for PET Bottle Recycling!

The recommendation mark of the Council for PET Bottle Recycling is an environmental label awarded to products that satisfy the prescribed requirements. For example, this mark is bestowed on products using flakes, pellets or powder recycled from the specified PET bottles used and collected in Japan, as raw materials to produce these products in part or in whole.



Clean Indoor Air for Comfortable Everyday Life

空気を洗う壁紙® (deodorant wallpaper)

[What is 空気を洗う壁紙® (deodorant wallpaper)?]

RUNON Co., Ltd., which is engaged in the planning and marketing of wallpapers and other interior products, sells 空気を洗う壁紙®, a functional wallpaper that absorbs and dissolves odor-causing substances for deodorization.

The deodorant wallpaper comes in a wide variety of patterns and colors, and therefore can find applications in various indoor spaces, ranging from general households to commercial facilities, whether newly constructed or renovated. Its lineup includes highly functional items, such as water-repellent ones with easy maintenance, and those with great breathability.

Lineup
495
items



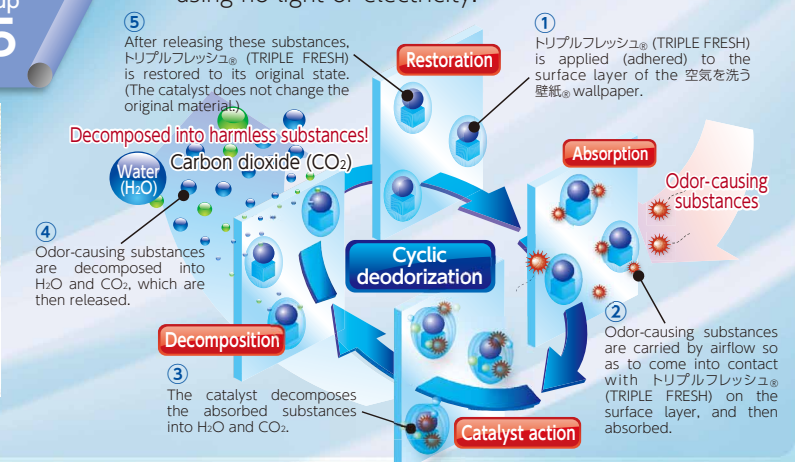
[Features]

● Use of トリプルフレッシュ® (TRIPLE FRESH), our proprietary deodorant treatment technology

This technology enables a cyclic deodorization process—from absorption and decomposition to restoration. The safety of the processing chemical is confirmed based on the SEK textile product certification criteria, having passed various toxicity tests.

● Deodorizing mechanism unique to 空気を洗う壁紙® wallpaper

The wallpaper has a cyclical deoxidization function, using no light or electricity.



Quality That Meets Aerospace Standards

Acquired JIS Q 9100 certification, an international quality management system standard in the aerospace field in Japan

Suminoe Textile Co., Ltd. acquired JIS Q 9100 certification for its aircraft carpet business.

Applied Standard: JIS Q 9100:2016

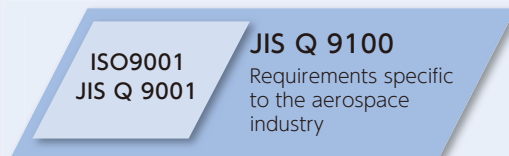
Certified Organization: Osaka First Sales Department, Functional Materials Business Division and Quality Assurance Department, Suminoe Textile Co., Ltd.

Controlling Address: 11-20, Minami-Semba 3-Chome, Chuo-ku, Osaka 542-8504 Japan, Head Office of Suminoe Textile Co., Ltd.

Scope of Certification: Design, development, contract manufacturing, and sales of carpets for aircraft interiors

[What is JIS Q 9100?]

JIS Q 9100 is an international quality management system standard, which includes the requirements for ISO 9001 plus additional requirements specific to the aerospace industry. JIS Q 9100 is technically equivalent to the AS 9100 standard used in the United States and the EN 9100 standard in Europe, allowing mutual certification with these American and European standards. With increasing demand for higher quality in the aerospace industry, parts suppliers are becoming required to obtain JIS Q 9100 certification.



[Merits of obtaining the certification]

- **Raising the level of quality:** To be certified, organizations work to raise the level of quality by formulating operation processes in line with the international quality management system standard and conducting continuous improvement activities.
- **Earning customer trust:** Organizations strive to improve customer satisfaction through high-quality and stable manufacturing. Also, the certification can help lighten the workload of these organizations' clients in conducting supplier audits.
- **Expansion from Japan to overseas:** Information on the registered certification is shared through an international database. This increases the appeal of certified organizations to overseas customer bases, thereby expanding opportunities for receipt of orders.

[Future task]

Taking advantage of the acquisition of JIS Q 9100 certification, the Company will intensify its quality improvement efforts, so as to satisfy the needs of customers not only in Japan but also in overseas countries, by offering more reliable products.



PH Film Affixed to the Train Floor to Indicate Priority Spaces

PH Film—signage film used on the floors of train cars

PH Film is a signage film designed to be affixed to the floors of train cars, bearing pictograms to indicate priority spaces for wheelchair and buggy users, etc. This film is helpful for announcing these priority spaces to passengers and calling their attention thereto.

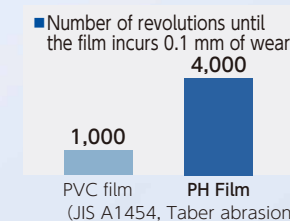


Features of PH Film

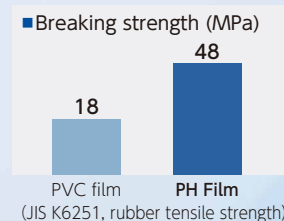
● Superior durability

PH Film places special focus on durability, so as not to break, peel off, wear down or become stained. To ensure safety, this film is also designed to prevent people from tripping on it and falling down. In addition, PH Film can remain highly stain-resistant even after a long period of use.

Abrasion resistance about four times higher than that of PVC film



Tear-proof property more than twice as high as that of PVC film



Basic performance of Suminoe Textile's floor signage film

● Easy to install

With a special adhesive on the back, this film can easily and quickly be affixed to the floors of train cars.

● Flame-retardant

The product is authorized as "flame-retardant" under the flammability test for railway vehicle materials.

● Anti-slip

The coefficient of slip resistance (CSR) under the JIS standard shows a high level of safety.

● Safe even during combustion

Characteristically, this film produces little smoke and generates very little toxic gas at the time of combustion.

[Making PH Film more value-added]

In the future, we will strive to offer even higher value-added products that satisfy social needs, by enhancing the quality of design and by expanding the scope of information to be conveyed, to include descriptions in foreign languages.

Upgrading Automotive Interiors!

Development of synthetic leather for automotive textiles

Against the backdrop of automotive globalization, the automotive interiors business sees increased demand for synthetic leather that can be used in combination with real leather. The Suminoe Textile Group has responded to the emerging needs by offering products with various features realized by the fusion of synthetic leather and technologies cultivated through the manufacture of fabrics.

[Features]

● Excellent design

The combination of a smooth, soft feel and embossing, printing and various other post-processing treatments has enabled us to uncover new design needs.

● Functionality

All our synthetic leather products meet the automotive standards, whose requirements include high quality and physical properties. We can also offer items that are waterproof but moisture-permeable, as well as items having other special properties, including high stain resistance.

● Reasonable cost and environmental performance

Compared with real leather, synthetic leather is less costly. Moreover, various types of eco-friendly synthetic leather are available. The lineup comprises items that are lighter than conventional ones, as well as items that use a smaller amount of solvent.



Construction of a new R&D laboratory

In 2017, a new laboratory was established at the Nara Factory of Suminoe Textile Co., Ltd., allowing us to conduct our own R&D activities to develop polyurethane (PU) leather and polyvinyl chloride (PVC).

[Purposes]

- Develop high-quality finished products on shorter delivery times.
- Improve not only design and texture, but also functional elements.
- Accumulate technological expertise.



Development laboratory

To Measure Biological Information in a More Comfortable Manner

Initiatives under way to develop fabric electrodes for biological information measuring sensors

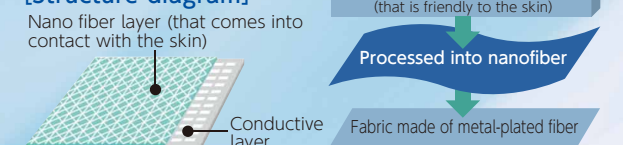
We continue to promote the development of fabric electrodes that can measure biological information, such as heartbeat and myoelectric signals, by combining our skills to search for electricity-conducting yarns and skin-friendly materials with our expertise in manufacturing and processing textiles.

Fabric electrodes that are friendly to the human skin

Biological information can be obtained from weak changes in electrical potential in the human body. In general, conductive gel is used to measure biological information. Although this method may be used for short-time measurement of a small area, it is not suited for long-time measurement.

We have recently developed technologies for creating a conductive fabric made of metal-plated fiber, and for nanoscale processing of materials whose surface is less irritating to users' skin when it is in close contact with the fabric. These technologies have improved adhesion to the skin, enabling us to develop breathable fabric electrodes that alleviate allergic reaction to the skin caused by contact with a plated fiber.

[Structure diagram]



Substantially improving breathability as compared with conventional electrodes, while maintaining the same measurement accuracy

	Ordinary electrode	Fabric electrode (developed by Suminoe)	Conductive fabric
Material	Conductive gel	Ultrafine fiber plus metal-plated fiber	Only metal-plated fiber
Breathability	×	○	○
Adherence	◎	○	×

Venturing into new fields

The Company is developing fabric electrodes by combining its skills to search for appropriate materials with its fabric manufacturing and processing technologies. Capitalizing on our expertise cultivated for conventional interior textile products, we will push forward with the development of smart textile/biological information measuring textile products, with the view of venturing into new fields.

[Development image]

