
April 2, 2026

PlaX, a Next-Generation Plant-Based Synthetic Fiber, Adopted in Naigai's "Minna no Kutsushita Aging Care Foot Aid Socks" Combining Antibacterial Functionality with Comfort and Sustainability



Tokyo April 2, 2026 – Bioworks, Corporation announces that its plant-based next-generation synthetic fiber “PlaX” has been adopted in “Minna no Kutsushita Aging Care Foot Aid Socks” by Naigai Co., Ltd. This marks the first time PlaX has been used in a Naigai product.

Background of the Initiative

Socks typically require durability and elasticity, and therefore often use petroleum-based synthetic fibers such as polyester and nylon. However, these materials rely on fossil resources, and their production and disposal processes contribute to greenhouse gas emissions, raising environmental concerns.

In addition, socks are among the most frequently replaced apparel items due to their short lifespan. Post-use reuse is difficult for hygiene reasons, and recycling is also challenging due to the mixing of multiple materials. As a result, there is a growing need for the development of more sustainable materials.

Against this backdrop, Naigai has been promoting sustainable manufacturing through everyday essential items like socks. To help preserve the global environment and finite resources for future generations, the company has been incorporating environmentally conscious materials and production processes, striving to balance comfort and sustainability.

As part of this initiative, Naigai is launching “Minna no Kutsushita Aging Care Foot Aid Socks” made with PlaX, the plant-based next-generation synthetic fiber developed by Bioworks.

PlaX is a synthetic fiber derived from plant-based raw materials such as sugarcane, and its application is expanding across various textile products as an alternative to petroleum-based fibers.

In addition, due to the properties of lactic acid, PlaX has the ability to suppress the growth of bacteria on the fiber surface, making it particularly suitable for products that come into direct contact with the skin, such as socks.

Furthermore, Bioworks has demonstrated that products using PlaX can be chemically recycled—even in blended material states—to recover high-purity, high-quality recycled monomers.

These combined attributes of functionality and environmental performance align with Naigai’s concept of achieving both comfort and sustainability, leading to the adoption of PlaX in this product.

Product Overview



Product Name: Minna no Kutsushita Aging Care Foot Aid Socks

Retail Price: ¥1,650 (tax included)

Colors: Pink, Beige, Ocean Green, Navy

Size: 22–24 cm

Materials: Cotton, Polylactic Acid (PLA), Polyester, Rayon, Nylon, Polyurethane

Sales Channel: [Naigai Official Online Store](#)

About PlaX

PlaX is a textile material that enhances the quality and functionality of polylactic acid (PLA), a biomass material derived from plants like sugarcane, by incorporating our proprietary plant-based additive. As a substitute for petroleum-based synthetic fibers like polyester, it contributes to lower carbon emissions and reduced environmental impact, making it a versatile material gaining global attention.

How We Address Environmental Impact

- **CO2 Emissions** : Compared to polyester, switching to PlaX can reduce CO₂ emissions by approximately 70% in the production of filament yarn and by approximately 50% in the production of staple fiber.
- **Water Usage** : PlaX consumes 92% less water than cotton, requiring only 65 liters to produce 1 kg, compared to cotton's 606 liters.
- **Biodegradability** : PlaX is biodegradable in certain circumstances, breaking down into water and CO₂.
- **Chemical Recycling** : We plan to establish a closed-loop recycling process, allowing PlaX to be continually regenerated, minimizing waste.

About Bioworks

Bioworks is a material creation company with a vision to build a " Empowering Creators, Inspiring Wearers: A New Ecosystem for a Sustainable Fashion Future" The company manufactures and sells the next-generation plant-based synthetic fiber "PlaX," made from polylactic acid (PLA). Since its founding in 2015, Bioworks has leveraged its expertise in PLA research and development and expanded into the textile business in 2021. The company's material is attracting attention from both domestic and international textile industry as a significant contributor to reducing reliance on petroleum-based resources.

Bioworks Corporation

Representative Director and CEO : Koji Sakamoto

Headquarters: Kyoto, Japan

Business Activities: Manufacturing and sales of modified polylactic acid compounds (PLaX) and products, businesses to promote resource recycling, etc.

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