



Shiseido and Spiber Jointly Develop Cosmetic Ingredient Using Protein Fiber and Formulate It into Products

~ Circular material balancing functionality and sustainability~

Shiseido Company, Limited (“Shiseido”) has jointly developed a cosmetic ingredient by using Brewed Protein™ fiber, a biodegradable*¹ structural protein made from plant-derived biomass, developed by Spiber Inc. (“Spiber”), with the goal of applying them in products. This is the first time that cosmetics containing Spiber’s material have been launched on the market. While taking the environment into consideration, we apply Brewed Protein™ materials in our products as mascara fiber that creates supple and beautiful eyelashes and will further promote its wider use in our future product development.

Shiseido is promoting the development of circular materials and products that achieve both high functionality and sustainability under the “Premium/Sustainability” approach of its R&D philosophy “DYNAMIC HARMONY” and based on the idea that resonates with the origin of the company name*².

*¹ Biodegradation of raw Brewed Protein™ fiber has been demonstrated in various natural environments including seawater, freshwater, and soil. (Tests in seawater and freshwater were conducted in accordance with ASTM D6691 and ISO 14851, respectively, and seawater tests confirmed more than 70% biodegradation within 30 days.)

*² A passage from Chinese Yi Jing: “Praise the virtues of the Earth, which nurtures new life and brings forth significant values.”

Joint development of sustainable cosmetic ingredients using Brewed Protein™ fiber

Brewed Protein™ fiber*³, developed by Spiber using its proprietary technology, is a structural protein fiber produced via a microbial fermentation process using plant-derived biomass such as sugar cane- and corn-derived sugars as the main raw material. Research has confirmed it to be biodegradable, and it has already been used in numerous clothing and apparel products as a raw material. In this project, we jointly developed a cosmetic ingredient, taking advantage of our strengths in material science, high commitment to quality, and our close attention to users’ preferences. After repeatedly studying the material from various perspectives, such as safety, stability, functionality, and usability as a cosmetic ingredient, we have succeeded in the formulation of Brewed Protein™ fiber into our mascara while maintaining the properties of the fiber. In December 2021, Spiber announced the registration of Brewed Protein™ materials as an INCI name, which allows the use of Brewed Protein™ materials, including fiber, as cosmetic ingredients*⁴.

*³ Brewed Protein™ is a trademark or registered trademark of Spiber Inc., applicable in Japan and other countries.

<https://spiber.inc/en/brewedprotein/>

*⁴ Brewed Protein™ materials “sr-polypeptide-1” has been registered as an INCI name, an international labeling name for cosmetic ingredients.

<https://spiber.inc/en/news/brewed-protein-material-sr-polypeptide-1-has-been-registered-as-an-inci-name-an-international-labeling-name-for-cosmetic-ingredients/>



Figure 1. Cosmetic ingredients based on Spiber's structural protein, Brewed Protein™ fibers.

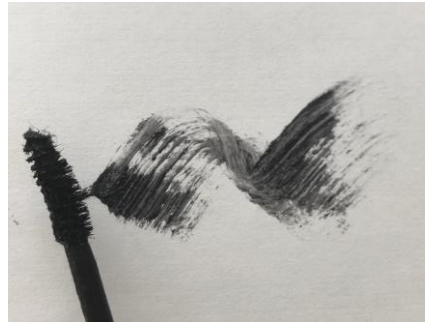


Figure 2. Mascara containing jointly developed cosmetic ingredients.

Toward compelling circular manufacturing that is friendly to both people and the global environment

In order to realize our corporate mission, “BEAUTY INNOVATIONS FOR A BETTER WORLD”, we have engaged in business activities while showing our respect for people, society, and the global environment, being grounded in ideas that resonate with the origin of the company name. As part of our R&D activities, we actively promote circular manufacturing, including the designing of sustainable containers and packaging with high functionality, the development of naturally-derived, highly-biodegradable raw materials and upcycled raw materials using manufacturing waste, as well as the cultivation of plants that are the source of raw materials.

Reference: Spiber Inc.

Director and Representative Executive Officer: Kazuhide Sekiyama

Headquarters: 234-1 Mizukami, Kakuganji, Tsuruoka, Yamagata, Japan

Spiber is a biotechnology venture established in Tsuruoka City, Yamagata Prefecture in 2007 that develops structural Brewed Protein™ materials by using plant-derived feedstocks as primary raw materials and is engaged in the development and production of next-generation new materials via microbial fermentation production technology. Spiber recently began production of Brewed Protein™ polymers at its first mass production plant in Thailand and is now building a new mass production facility in the U.S. in collaboration with ADM.

Shiseido's R&D philosophy “DYNAMIC HARMONY”

Shiseido Formulates its Unique R&D Philosophy “DYNAMIC HARMONY” (2021)

<https://corp.shiseido.com/en/news/detail.html?n=0000000003252>

The DYNAMIC HARMONY special website

<https://corp.shiseido.com/en/rd/dynamicharmony/>

<Reference>

Researchers' challenges

■ Encounter with Spiber

In our development of sustainable raw materials, we are exploring materials that are both highly functional and sustainable. As we value Spiber's technical expertise in developing new materials in the clothing industry and share the same understanding of tackling global issues, we realized the development of this cosmetic ingredient through cross-industry collaboration.

■ Cross-industry challenges

Although Brewed Protein™ fiber had already been used for clothing, our project was the first attempt to launch it as a cosmetic ingredient on the market. In order for us to use it in cosmetics products as a raw material, the material must meet various standards, which required us to conduct research with a number of new ideas and innovations, and whenever the researchers encountered something new or different from that in the existing cosmetic ingredient development process, they persistently examined the problems and consulted the team members both at Shiseido and Spiber. As a result, after understanding the differences in what we think normal between different industries and continuing discussions to find a solution, we achieved the practical use of this material as a raw material for cosmetics products.

■ Accelerating sustainable manufacturing with Shiseido's technological capabilities

There has been a growing interest in environmentally friendly, sustainable manufacturing. Shiseido aims to reduce environmental impacts and realize circular manufacturing in various business processes based on ideas that resonate with the origin of the company name. I believe that Shiseido's technological capabilities will help accelerate the realization of these goals.



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