

October 7, 2025

Nagase & Co., Ltd.

Nagase-OG Colors & Chemicals Co., Ltd.

Micro Bio Factory Co., Ltd.

### **EnzyBlue, Recycled Indigo Dye Made from Waste Fibers, Developed**

Nagase & Co., Ltd. (Head Office: Chiyoda-ku, Tokyo; Representative Director, President and CEO: Hiroyuki Ueshima), the NAGASE Group's Nagase-OG Colors & Chemicals Co., Ltd. (Head Office: Osaka City, Osaka; President and CEO Atsushi Shinoda; "ONC"), and Micro Bio Factory Co., Ltd. ((Head Office: Osaka City, Osaka; CEO Masashi Shimizu; "MBF") have jointly developed EnzyBlue, a recycled indigo dye made by reusing indigo dye extracted from waste denim fibers and used clothes. By reusing materials that would have previously been incinerated or sent to a landfill, the goal is to create a sustainable manufacturing cycle and reduce the environmental burden by eliminating waste.

In recent years, with the expansion of fast fashion and the growing diversity in consumption habits, the clothing industry has begun recognizing issues such as resource depletion and the growing environmental burden from waste. In particular, denim is one of the most common fabrics in the world, with two billion pairs of jeans being made annually. There are several concerns from the perspective of sustainability regarding the synthetic indigo dye normally used to dye denim. In order to respond to these concerns, the NAGASE Group and MBF developed a recycled indigo dye using waste fibers.

Although the development of a recycled indigo dye was viewed as unfeasible in the past, it was made possible by using the enzyme technology MBF established over long years of research to extract the dye from waste fibers. ONC manufactures the recycled dye made using this technology, and provides expertise in quality control and mass production. Nagase & Co. utilized its domestic and global networks in both the clothing industry and the dye industry, which Nagase has been involved with since its founding, in combination with MBF's enzyme technology and ONC's manufacturing technology to create EnzyBlue, a practical and sustainable recycled indigo dye. EnzyBlue is made using enzymes from the NAGASE Group, and its name is derived from "enzyme."



EnzyBlue logo



Waste fibers, now usually incinerated



Enzymatic decomposition

By contributing to increased sustainability of the dye industry through the use of the recycled indigo dye EnzyBlue by clothing manufacturers in Japan and abroad, the three companies involved in its development aim to create a safe and responsible manufacturing system with a reduced environmental burden and improved recycling of resources. The companies will also pursue further improvement of the technology and support the adoption of sustainable fashion.

◆For an introduction of sustainable indigo dyes, see [here](#) (Japanese only).

#### **Nagase & Co. Profile**

- Company Name: Nagase & Co., Ltd.
- Head Office: Chiyoda-ku, Tokyo
- Representative: Representative Director, President and CEO Hiroyuki Ueshima
- Business Overview: Import/export and domestic sales of chemicals, plastics, electronics materials, cosmetics and health foods
- URL: <https://www.nagase.co.jp/english/>

#### **Nagase-OG Colors & Chemicals Co.. Profile**

- Company Name: Nagase-OG Colors & Chemicals Co.,Ltd.
- Head Office: Nishi-ku, Osaka City
- Representative: President and CEO Atsushi Shinoda
- Business Overview: Sales of dyes and chemicals
- URL: <https://ognagase.co.jp/english/>

#### **Micro Bio Factory Profile**

- Company Name: Micro Bio Factory Co., Ltd.
- Head Office: Kita-ku, Osaka City
- Representative: CEO Masashi Shimizu
- Business Overview: R&D, manufacturing, and sales of biochemical products
- URL: <https://microbiofactory.co.jp/>(Japanese only)

#### **■Inquiries**

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