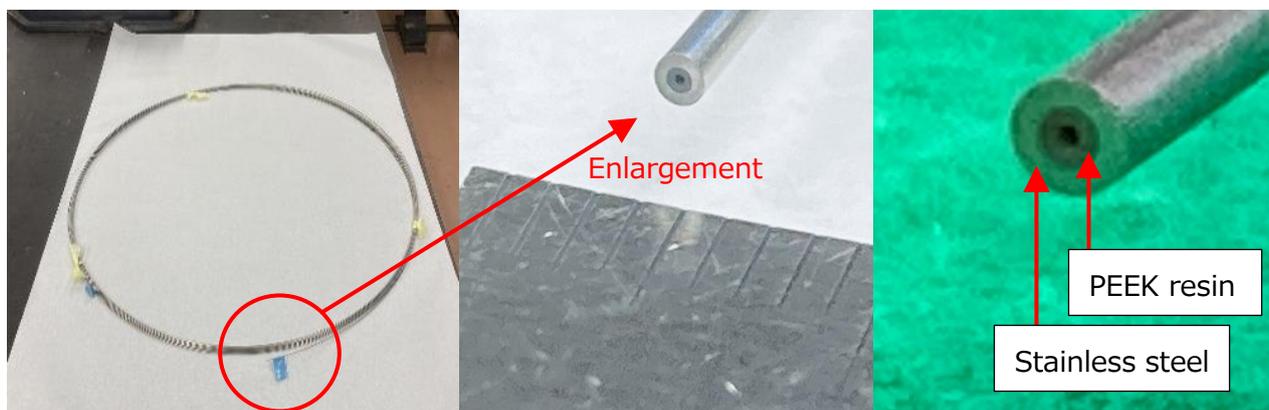


Announcement of Establishment of Mass Production System for Small Diameter "FINE PEEK-ST Capillary Coiled Tube" Which Compatible with Higher Performance and Faster Analytical Equipment

- Composite Pipe Made of Stainless Steel and PEEK Resin Available in Lengths up to 20m -

NIPPON KINZOKU CO., LTD. (TOKYO: 5491, Headquarters: Minato-ku, Tokyo) have announced that we have recently established a mass production system for "FINE PEEK-ST capillary coiled tube".



FINE PEEK-ST capillary coiled tube (20m)

In January 2019, we started selling "FINE PEEK-ST column (stainless steel/PEEK resin: composite column)." It is a composite tube that uses a resin for the inner tube and high-strength austenitic stainless steel (NK-304NF) based on our unique component design for the outer tube. Although it is used in analytical column tubes, we have proceeded with the development of a smaller diameter in order to meet the needs of users who are asking whether it is possible to combine the capillary piping that connects before and after the analytical column tube. As a result, we have realized a small diameter capillary tube with an outer diameter of 1/16" (1.59mmφ) and an inner diameter of at least 0.10mmφ, and have commercialized the "FINE PEEK-ST capillary tube." *1

*1 Reference: Press release dated April 6, 2021

Announcement of Development and Commercialization of Small Diameter "FINE PEEK-ST Capillary Tube" Which Compatible with Higher Performance and Faster Analytical Equipment (in Japanese)

https://www.nipponkinzoku.co.jp/assets/images/2021/04/210406_nipponkinzoku.pdf

We provide samples of the "FINE PEEK-ST capillary tube" to domestic and overseas analytical instrument manufacturers, and it has received high praise for its performance from each company. But there is a strong need for long products, and there have been many requests for coiled piping, since capillary piping requires large quantities. In order to meet them, we developed the "FINE PEEK-ST capillary coiled tube" in December 2021 by increasing the length of the conventional 2000 mm straight tube. *2

And now, we have established a mass production system for "FINE PEEK-ST capillary coiled tube", which integrates stainless steel and PEEK resin and has a maximum length of 20 meters.

*2 Reference: Press release dated December 1, 2021

Development of Small Diameter "FINE PEEK-ST Capillary Coil" with a Length of 30m Which Compatible with Higher Performance and Faster Analytical Equipment (in Japanese)

https://www.nipponkinzoku.co.jp/assets/images/2021/11/211201_nipponkinzoku.pdf

In the future, we will aim to extend the length of products that can be manufactured in order to meet the further needs of our customers.

This product is also the result of research and development that contributes to the future of people and the earth through rolling and composite forming with "Multi & Hybrid Material" (Utilizing a wide variety of materials to meet various needs) as keyword, in line with the vision of the 11th management plan "NIPPON KINZOKU 2030".

Capillary tube overview

Capillary is a general term for hollow tubes, especially those with a small inner diameter. For example, in analytical equipment such as high-performance liquid chromatography (HPLC) and gas chromatography (GC), it is used for piping that connects analytical column tubes to pressure pumps and detectors. As the performance and speed of analytical equipment increases, there is a need for smaller inner diameters of piping, higher accuracy in inner roundness and roughness, and higher pressures.

In addition, highly corrosion-resistant austenitic stainless steel, such as SUS316L, has been used to analyze coordination compounds (e.g. ATP with phosphate group) that are easily affected by metal ions in the biochemistry and biotechnology fields. But, because there are concerns about the effects of adsorption on the inner surface of piping, methods that do not use metal pipes (metal-free) are considered effective.

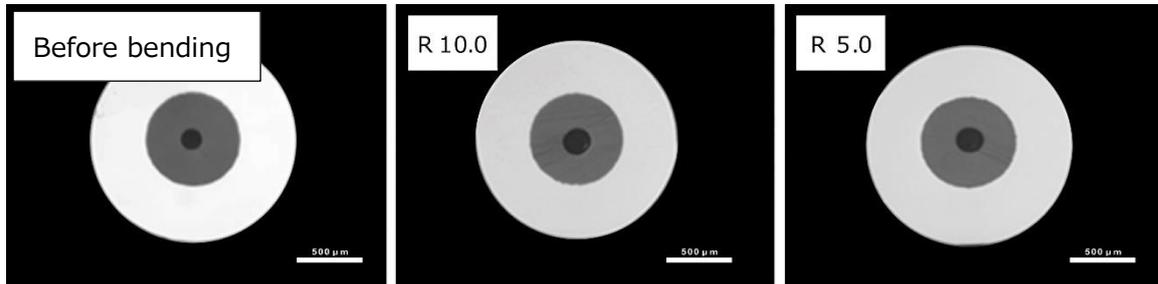
"FINE PEEK-ST capillary coiled tube" overview

1. Features

1. The outer tube is made of austenitic stainless steel such as SUS316L, and the inner tube is made of PEEK (polyetheretherketone) resin. By using stainless steel for the outer tube, the physical strength, which has traditionally been an issue with PEEK tubes, has been significantly improved, and it can be used in ultra-high pressure environments of over 100 MPa.
2. Because the outer tube and inner tube are integrated using a special process, we have confirmed that no peeling occurs even when bending with a small radius. It can be used with confidence even in complex piping. (Document)
3. The inner diameter has a surface roughness of Ra0.3 μ m or less and a good shape that is close to a perfect circle. Highly accurate analysis is possible compared to general piping.

4. Since the coil shape has a maximum length of 20m, it is possible to cut it to any length. It is expected that customers will be able to reduce costs by improving yields during use, and expand their applications by making them longer.

Document



2. Available steel types and sizes

Outer tube: Austenitic stainless steel (e.g. SUS316L)

Inner tube: PEEK resin

Size: Outer diameter 1/16" (1.59mmφ)

Inner diameter 0.10mmφ~0.50mmφ (Please contact us separately for other sizes.)

<https://www.nipponkinzoku.co.jp/products/peek> (in Japanese)

We also have a lineup of general capillary tubes made of austenitic stainless steel. We are also working to improve the accuracy of the inner diameter, and as of February 2024, we are developing products with internal roughness Ra0.5μm or less for coils with inner diameters of up to 0.5mmφ and lengths of 100m to 300m. *3

We provide samples and have received high praise from various companies for our "Near Net Performance" (Achieving the performance required for the final product with materials and components) product.

*3 Reference: Press release dated April 18, 2023

NIPPON KINZOKU has Commercialized Small-Diameter Tubes with "Inner Surface Precision"

https://www.nipponkinzoku.co.jp/assets/images/2023/04/230418_nipponkinzoku_news_en.pdf

About the vision of the 11th Business Plan "NIPPON KINZOKU 2030"

We have set our vision "Multi & Hybrid Material Company that creates new eco and human friendly values together ~By rolling and composite forming a wide variety of materials, we achieve the performance required for the final product and contribute to the future of people and the earth~" in our 11th Business Plan.

We are conducting research and development with the aim of rolling a wide variety of materials that meet your needs and combining them with different materials (e.g. resins).

"FINE PEEK-ST capillary coiled tube" is a product created as part of this research and development. We will continue to carry out research and development based on the vision of our business plan.

Note: This document has been translated from a part of the Japanese original for reference purposes only. In the event of any discrepancy between this translated document and the Japanese original, the original shall prevail.

* * * Contact * * *

Sales Development Dept.

NIPPON KINZOKU CO., LTD.

<https://www.nipponkinzoku.co.jp/en/inquiry>