

**NIPPON KINZOKU Launches Sample Supply of
“Internally Polished Capillary Tubes” for High-
Performance Analytical Instruments
- Achieving Internal Surface Roughness of $Ra \leq 0.2\mu\text{m}$ in
Ultra-Small 0.30 mm ID Tubing -**

NIPPON KINZOKU CO., LTD. (Headquarters: Minato-ku, Tokyo; President: Yasushi Shimokawa; TYO: 5491) announces the launch of a sample supply system for its "Internally Polished Capillary Tubes (Fine Pipe)."

These tubes feature significantly enhanced internal smoothness in ultra-small sizes, realized through the development of the company's proprietary internal polishing technology.

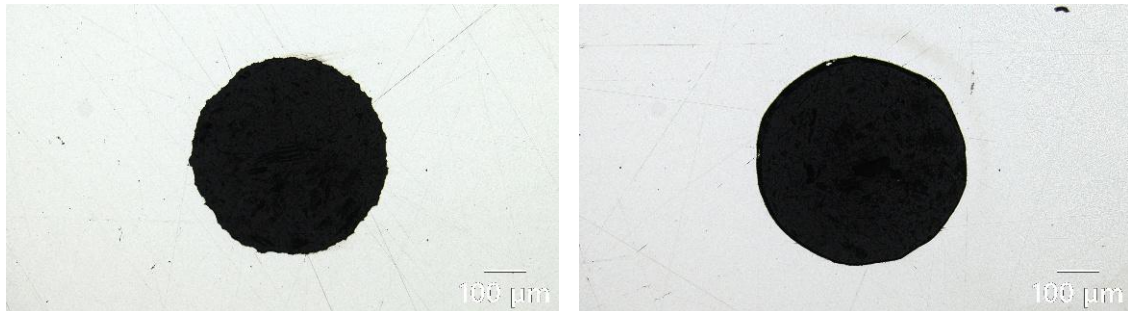


Photo 1: Cross-section of the tube (Left: Before polishing; Right: After polishing)

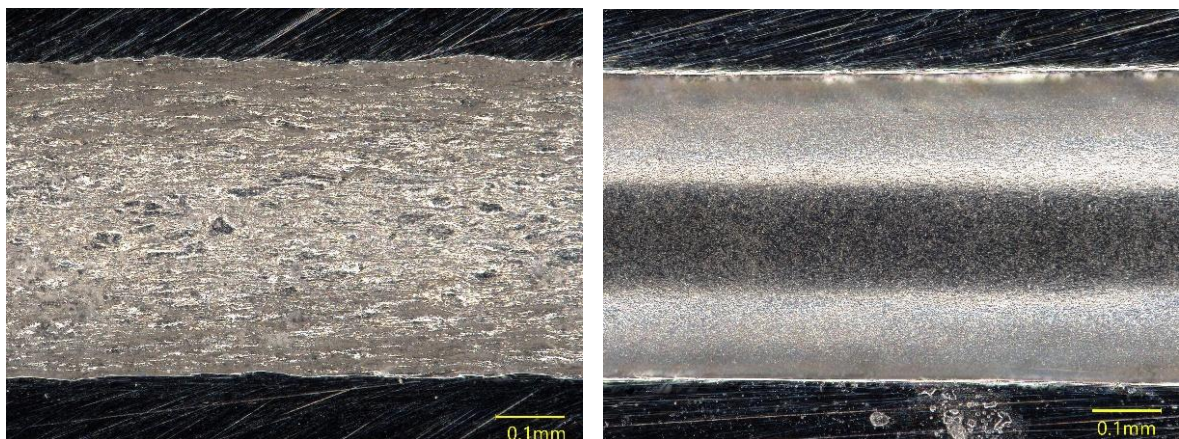


Photo 2: Internal surface condition

(Left: Before polishing, $Ra\ 2.0\mu\text{m}$; Right: After polishing, $Ra\ 0.15\mu\text{m}$)

■ Background: Rising Demand for "Ultra-Small Diameter x Ultra-Smooth Internal Surfaces"

NIPPON KINZOKU has previously developed high-precision, small-diameter tubes made of austenitic stainless steel with an internal diameter (ID) of 0.50mm and internal surface roughness of $\leq 0.5\mu\text{m}$, which have been highly evaluated across various industries.

Reference: Press Release (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

In recent years, the advancing performance of analytical, medical, and biotechnological equipment has driven a rapid surge in demand for capillary tubes* with even smaller diameters and smoother internal surfaces. To achieve a level of internal roughness in the 0.30mm ID class that was previously unattainable through conventional manufacturing methods, we have established our proprietary internal polishing technology.

**Capillary tubes are ultra-fine hollow tubes, typically used in analytical instruments such as High-Performance Liquid Chromatography (HPLC) and Gas Chromatography (GC). They serve as critical components connecting analytical columns, pressure pumps, and detectors. As these instruments evolve toward higher performance and faster processing, there is a growing demand for tubing with smaller IDs, enhanced precision in roundness and roughness, and superior pressure resistance.*

■ Key Features of "Internally Polished Capillary Tubes"

Leveraging our advanced precision processing technologies, this product delivers the following superior characteristics:

1. **Unmatched Internal Smoothness:** Dramatically reduced internal surface roughness from the conventional $Ra \leq 0.5\mu\text{m}$ to $Ra \leq 0.2\mu\text{m}$.
2. **High Dimensional Precision:** Achieves a tight internal diameter (ID) tolerance of $\pm 0.03\text{mm}$ across ultra-small sizes ranging from 0.30 to 0.70mm.
3. **Excellent Corrosion Resistance:** Constructed from high-grade austenitic stainless steel, these tubes are ideal not only for analytical instruments but also for diverse applications including medical/biotech equipment, semiconductors, and high-purity gas supply systems.

■ Future Outlook

We are currently proceeding with the design and construction of manufacturing equipment, aiming for mass production within fiscal year 2027.

This product embodies the "Near Net Performance" concept (= achieving the performance required for the final product at the material/component level) set forth in our 11th Business Plan, "NIPPON KINZOKU 2030." We will continue to provide new value that meets social needs through our rolling and composite forming technologies for a wide variety of materials.

[Summary of Sample Supply]

- **Steel Grades:** Austenitic stainless steel (e.g., SUS304, SUS316L)
- **Available Sizes:** Outer Diameter (OD) 1/16" (1.59mm); Internal Diameter (ID) 0.30–0.70mm
- **Internal Surface Roughness:** Ra ≤ 0.2μm
- **Product Form:** Straight tubing (Maximum length: 500mm)

(Please contact us regarding specifications other than those listed above.)

● **Fine Pipe Product Overview**

Our Fine Pipes are engineered with the optimal quality (internal surface roughness, roundness, straightness, dimensional accuracy, etc.) according to the application and are adopted as core components in a wide range of fields.

<https://www.nipponkinzoku.co.jp/en/corporate-profile/business/precise-processed-products>

● **R&D Laboratory Overview**

Taking advantage of its location in Tokyo, our "Open Laboratory" encourages customers to visit and collaborate. We respond to customer needs and develop new technologies using various experimental and inspection facilities.

<https://www.nipponkinzoku.co.jp/en/corporate-profile/office/laboratory>

● **Gifu Plant Overview**

Main products: Fine Pipes, special alloy pipes, stainless steel-sheathed optical fibers.

<https://www.nipponkinzoku.co.jp/en/corporate-profile/office/gifu-plant>

● **About the 11th Business Plan "NIPPON KINZOKU 2030"**

Under our vision of being a "Multi & Hybrid Material company that co-creates new value friendly to people and the planet," we are advancing R&D aimed at rolling diverse materials and forming composites with different materials (such as resins). These "Internally Polished Capillary Tubes" were born as part of this R&D effort. We will continue to promote research and development based on our management plan's vision.

<https://www.nipponkinzoku.co.jp/en/investor-relations/strategies>

Note: This document has been translated from a part of the Japanese original. It is provided for reference purposes only. If there's a difference between this translated document and the Japanese original, the Japanese original will take precedence.

*****Contact for Product and Technical Information*****

NIPPON KINZOKU CO., LTD. Production Process & Support Department

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