

# Micro & Fine Technology made of stainless steel wires

Finer than a hair, yet as strong as steel: Nippon Seisen adopts 'Micro & Fine Technology' to develop the world's thinnest stainless-steel super-fine wires and metal fibers, which have a range of applications across several industries

Japan is seen as a hub for high-performance, cutting-edge technologies, and this is also true in the stainless steel wire and metal fiber industry, where companies are now required to make thinner, stronger and more precise materials for a range of demanding hi-tech industries such as automotive, IT, energy and healthcare.

A global leader in the manufacturing of stainless steel wires and metal fibers, Nippon Seisen is building on the technology it has developed over its 66-year history to supply high-quality, next-generation materials that support the high performance of its customer's end products.

The company's product portfolio of what it calls 'Micro & Fine Technology' includes: the world's thinnest stainless-steel super-fine wires (which the company boasts are finer than a strain of hair); high-strength, heat-resistant stainless-steel spring wires; and its 'NASLON' stainless steel metal fibers. Available in cloth, felt, knit, tape and other variations, these metal fibers have the same level of workability and flexibility as

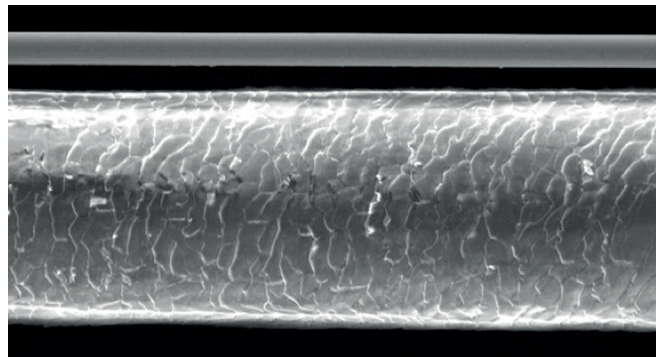
a textile fiber, but with the added strength of stainless steel.

Employing its superior stainless-steel fibers such as 'NASLON', Nippon Seisen also manufactures metal filters used in carbon-fiber manufacturing and ultra-high-purity gas filters used for semiconductor production equipment, which are characterized by superior particle removal capability and low pressure drop.

A special steel manufacturing engineer by trade, the company's president, Mr. Motoshi Shinkai is unequivocal about the competitive advantages of his company and Japanese manufacturing in general over its regional competitors such as China and Korea.

"When producing products that requires compactness, lightness and high performance, it is a prerequisite to have a high level of skill and cutting-edge technology that includes material, processing technology, components performance, production machinery, tools and molds. Japanese manufacturing superiority is in the high level of communication and mutually supportive culture that exists between extremely competent, specialty-focused small to mid-sized companies specialized in material processing," he says.

The competitive strengths of Nippon Seisen in particular lies in its 'Micro & Fine Technology' and cutting-edge product development carried out in collaboration with its customers, as well as its high-quality raw materials. These materials are sourced from the best



Nippon Seisen's stainless-steel super-fine wires are almost eight times thinner than a strain of hair

special steel and alloy suppliers in Japan, including its parent company Daido Steel.

Indeed, Nippon Seisen's cutting-edge products are the result of the painstaking work of its R&D department, which has recently developed a hydrogen separation membrane (HSM) for high-purity hydrogen gas production and purification. This innovation is already drawing interest from those in the automobile industry developing hydrogen fuel cell vehicles, and also has applications in the oil & gas and semiconductor industries.

"Our R&D is market-oriented as we develop materials required by society. Our target market is firstly the automotive sector, then the environment and IT, and finally the medical sector," says Mr. Shinkai.

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## NIPPON SEISEN CO., LTD. **Micro&Fine Technology**

Since 1951, Nippon Seisen has been supplying value-added items such as stainless steel wire-based NASLON (metal fiber) and high alloy steel wires to customers all over the world. As the leading supplier of stainless steel wires, we will continue to lead the industry by developing next-generation materials based on our "Micro & Fine Technology".



## Micro & Fine Technology ステンレス鋼線 (和訳)

髪よりも細く、かつ鋼並みに強く。

日本精線はMicro & Fine Technology技術を活かし、世界で最も細いステンレス製の極細線と金属繊維を開発する。これらの製品は様々な産業で採用されている。

現在の日本は、世界から高機能製品・先端技術の発信基地・マザー工場として位置付けられている。これは日本精線が属するステンレス鋼線・金属繊維業界も例外ではない。材料メーカーは自動車・IT・エネルギー・医療等のハイテク産業からの更なる細径化・強度アップ・高精度化、という広範囲かつ高度な要求への対応を求められている。

日本精線は世界のステンレス鋼線・金属繊維のリーディングカンパニーである。創業から66年以上の歴史で培った技術をベースに高品質な次世代材料を供給し、顧客が生産する完成品の高機能化を支えている。

日本精線のMicro & Fine Technology製品のラインナップは以下の通り：

- ・髪よりも細い極細線。
- ・高強度・耐熱性を有するばね用ステンレス鋼線。
- ・NASLON（金属繊維）。  
金属繊維は洋服・フェルト・編み物・テープ等に使用できる。  
織物繊維と同レベルの加工性と柔軟性、ステンレス鋼の強靭さを併せ持つ。

NASLONはステンレス鋼の優れた特性を活かした金属繊維材料で、炭素繊維の製造工程に使用されている。超精密ガスフィルターは半導体製造装置のフィルターメディアに使用され、高精度・低圧損が特徴。

特殊鋼の製造技術者出身である新貝元社長は、中国や韓国の企業と比較した日本精線及び日本のものづくりの優位性を明快に語ってくれた。

「小型・軽量・高性能などの機能を求める製品を造る場合、素材・加工技術・部品性能・工作機械・工具・金型などものづくりに関わる複数工程全てで優れた技能・技術を持っていないと成立しない。日本の強みは素材からそれぞれの製造工程で、特に優れた専門技術を持った中小企業が、摺合せ、連携できる文化であり、企業群の総合力である。」

「日本精線の強みはMicro & Fine Technology技術と、お客様と材料メーカーとの共創（摺合せ）で行う時代を先取りした技術・商品開発力であり、素材の高品質さである。素材は親会社である大同特殊鋼(株)をはじめ、日本の優れた特殊鋼メーカーから調達している。」

日本精線が販売する最先端商品はまさに長年に亘るたゆみない研究開発の成果であり、直近では高純度な水素ガス製造、精製に使用される水素分離膜モジュールを開発した。この革新的技術は既に水素燃料電池車の分野で注目され、オイル&ガス、半導体業界での需要も見込まれている。

新貝社長は続ける：

「日本精線の研究開発方針は、社会・マーケットから必要とされる材料を開発する。ターゲットとしている市場は自動車、IT分野・そして医療分野である。」

「ステンレス鋼、金属繊維、Micro & Fine Technologyは限られた製品分野であるが、用途は多彩。日本精線には広範囲な高機能・独自製品があり、グローバルニッチ市場でNo. 1を目指す。」