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News Release

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Sumitomo Electric Industries, Ltd

Sumitomo Electric Releases Cross-Linked Fluororesin FEX™ Tape with Approximately 1,000 Times Higher Wear resistance

Sumitomo Electric Industries, Ltd. has developed "cross-linked fluororesin FEX™ tape" (FEX™ tape), which is about 1,000 times more resistant to wear than conventional fluororesin (PTFE*1) tape. After sample shipment scheduled to start in December 2021, it will be on sale from April 2022.

Cross-linked fluororesin FEX™*2 (Fluoro Ethylene Crosslinking) was developed by Sumitomo Electric in 2012 by making full use of two key technologies, fluorine processing technology and electron beam irradiation technology.*3 Taking advantage of its characteristics, such as about 1,000 times more resistance to wear than conventional PTFE, strengthened adhesion to base materials, and improved durability, FEX™ has been used for coating a wide variety of products that go beyond the range of conventional fluororesin applications, such as automobiles, office equipment, semiconductors, and medical products, since its release.

As a new product form of FEX™, the Company has developed FEX™ tape, which allows users to easily utilize the high wear resistance of FEX™ just by attaching it to an object, and has made the product ready for mass production.

The use of FEX™ tape for equipment eliminates the need for frequent replacement of parts and tape due to wear and peeling, thus the product is expected to bring various advantages over conventional fluororesin tapes,

[Cross-linked fluororesin FEX™ tape]

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such as extended service life and less frequent maintenance of equipment, improved workability, and the prevention of scratches on equipment. In addition, the product is environmentally friendly because its excellent slipperiness and wear resistance contribute to the reduction of load on equipment and wear debris, respectively.

In order to reduce environmental burden, tape products with more functionalities are increasingly needed. FEX™ tape can be used extensively and effectively as an alternative to conventional fluororesin tapes. While Sumitomo Electric expects annual sales of about 100 million yen in 2023, the Company anticipates that there will be increasing applications where FEX™ tape is useful since environmental consideration is increasingly required in today's society.
Sumitomo Electric will continue to support manufacturing industry around the world by meeting social needs with its unique material and application development technologies.

*1
PTFE stands for polytetrafluoroethylene, which is a linear polymer of fluorine (F) and carbon (C). Since the bonding force between C and F is extremely strong and stable, it has excellent properties, such as extremely high slipperiness (the lowest level of friction in solids), non-adhesiveness, heat resistance, chemical resistance, and weather resistance. In addition, due to its lowest electronegativity and polarity among macromolecules, it is difficult for foreign molecules to adhere to it, and the fluorine molecules are weakly bonded to each other, making them prone to wear.

*2
The wear resistance of cross-linked fluororesin FEX™ has been improved up to approximately 1,000 times by applying a cross-linking reaction (see *3) to PTFE in order to overcome the weaknesses described in *1 while maintaining the original excellent properties.

*3

A technology to irradiate polymer materials with electron beams. Sumitomo Electric introduced Japan's first commercial electron beam accelerator in 1964, starting the production and sales of the heat shrink tubing "SUMITUBE™," the heat-resistant tubing "IRRAX™ TUBE," and the modified engineering plastic "TERALINK™." This time, very strong covalent bonds were formed by irradiating PTFE with an electron beam under special conditions to generate a cross-linking reaction, which forms "bridges" between molecular chains. Therefore, various properties, such as heat resistance, chemical resistance, and wear resistance, have been improved.

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https://sumitomoelectric.com/products/electronics

・The Cross Linked Fluorine Resin FEX™
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