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NEWS RELEASE

Mitsui Kinzoku Begins Mass Production of MicroThin™, an Extremely -Thin Electrodeposited Copper Foil with Carrier for 5G and IoT Devices

—Development of MT-GN with a low roughness for high-frequency products—

Mitsui Mining & Smelting Co. Ltd. (President: NISHIDA Keiji; “Mitsui Kinzoku,” hereinafter) is pleased to announce today that it has started mass producing and shipping its latest MT-GN, an extremely-thin electrodeposited copper foil with carrier MicroThin™.

Manufactured by Mitsui Kinzoku, MicroThin™[*1] is an extremely-thin copper foil (thickness: 1.5 to 5 µm) that is suitable for forming fine circuits supported by a copper carrier foil (thickness: 12 µm, 18 µm). This product has been highly regarded by our customers as its ability to be shipped in rolls as wide as 1,300 mm and its highly stable carrier peel strength help increase their productivity and process yield.

The newly developed MT-GN is a lower roughness copper foil that reduces the nodular size to about 1/3 of our flagship MT-FL[*2], and achieve the same adhesion to the resin substrate as MT-FL. We have already proceeded with the last step of its evaluation for adoption for combined use with the next generation of resin substrate materials with ultralow transmission loss. Going forward, the following effects are expected for 5G and IoT products with higher speed communication and for printed circuit board using MSAP（Modified Semi Additive Process） method , which is advancing with finer circuits.

(1) Improving Signal Integrity by reducing transmission loss

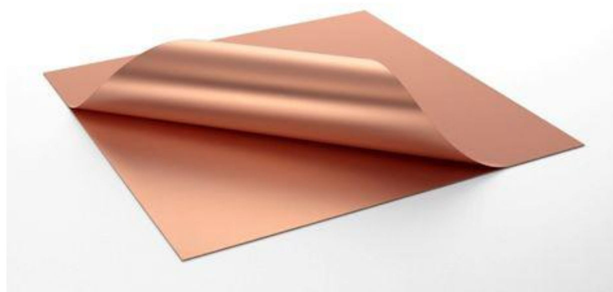
5G and IoT devices use sub-6 GHz bands (3.7 GHz band, 4.5 GHz band) or a quasi-millimeter-wave band (28 GHz band) and advanced driver assistance system (ADAS) and autonomous automobile sensors use a millimeter-wave band (77 GHz band), etc. In these cases, the higher ~~the~~ frequency used, the increase the transmission loss (signal attenuation) and thus deterioration the signal integrity. The lower roughness of the MT-GN will reduce transmission loss and significantly improve the signal integrity of products.

(2) Improvement of fine circuit formability by reducing etching amount

Circuit formation using "MicroThin™" is mainly processed by the MSAP method. Since the nodular size are smaller, the amount of etching can be reduced. And finer circuits can be formed. Also, by using the MSAP method, it is possible to reduce the circuit width tolerance in the printed circuit board compared to the conventional etching method. The circuit impedance can be controlled as designed, and further improvement in signal integrity can be expected.

Under the slogan of *Taking full advantage of Material Intelligence*, we at Mitsui Kinzoku will continue to ensure stable product quality and sufficient supply capabilities for our customers while at the same time contributing to the creation of a sustainable society through our business activities.

*1: Picture of MicroThin™



Top: Copper carrier foil (thickness: 18 µm and 12 µm)
Bottom: Extremely-thin copper foil (thickness 1.5 to 5 µm)

*2: MT-FL

MT-FL is a MicroThin™ for high performance application processors and memories, and high-speed and large-capacity communication devices. Fine circuits with Line (circuit width) / Space (space between circuits) = 20µm / 20µm or less can be formed with high accuracy.

<For reference> Relationship to the Sustainable Development Goals (SDGs)

The SDGs are a set of 17 goals to be achieved by 2030. They were adopted by the UN at the UN General Assembly held in September 2015. This activity in the copper foil business apply to the SDGs below.

3. Good health and well-being

We will continue to contribute to the achievement of the SDGs.

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