

November 24, 2020

JX Nippon Mining & Metals Corporation

**Start of Sample Shipments of High-Functionality Copper Alloys and Rolled Copper Foil
— Development of New Products:
Titanium Copper, Corson Alloy, and Rolled Copper Foil for Lithium-Ion Batteries —**

JX Nippon Mining & Metals Corporation (President: Murayama Seiichi; “the Company”) has developed new high-functionality copper alloys and rolled copper foil, and has already begun to ship samples. These new products use technologies and alloy development expertise accumulated over many years of integrated production covering every stage from melting and casting to rolling, heat treatment, and slitting. The products are outlined below.

1. C1995 Ultra-High-Strength Titanium Copper

Titanium copper, a high-strength copper alloy, is used in spring materials for smartphone camera modules. Larger lenses are also being fitted as part of recent efforts to boost camera function performance, requiring spring materials with higher strength than before. The Company has developed C1995 ultra-high-strength titanium copper with tensile strength of 1,500 MPa, the highest level of copper alloy fulfilling such needs (see Figure 1).

2. NKC8738 Corson Alloy Offering Both High Strength and High Conductivity

As CPU operational performance has improved in recent times, CPU socket connections have adopted narrower pitches and carry greater amounts of electricity, and Corson alloys* used for these applications have required higher levels of both strength and conductivity. NKC8738 Corson Alloy developed by the Company is a high-performance copper alloy for CPU sockets that combines 1,000 MPa tensile strength—the highest level of any Corson alloy—with high conductivity (40% IACS) (see Figure 1). This high performance makes it suitable for not only CPU sockets, but also micro-connectors used in devices such as smartphones, which are achieving ever-higher performance.

3. Rolled Copper Foil for Lithium-Ion Batteries with High Thermal Resistance

Remarkable advances have recently been made in development of technologies for higher output from lithium-ion batteries fitted in electronic devices such as drones and wearable terminals. Coating anodes with active material to improve battery output density requires long periods of high-temperature heat treatment, and copper foil used for anode current collectors needs high levels of thermal resistance. The Company has developed a new rolled copper foil capable of withstanding such heat treatment (see Figure 2). This product will be able to contribute to improved output and extended operating times for a variety of electronic devices.

These new products will be exhibited at the 7th Highly-functional Metal Expo Tokyo, to be held at Makuhari Messe on December 2 (Wed)–4 (Fri). The Company will continue to proactively contribute to the development of the data society through timely development and supply of products that respond to our customers' demands.

*Copper alloy made using nickel and silicon as the principal alloying elements.

For reference:

Figure 1: Positioning of the Company's Key Copper Alloy and New Products (C1995, NKC8738)

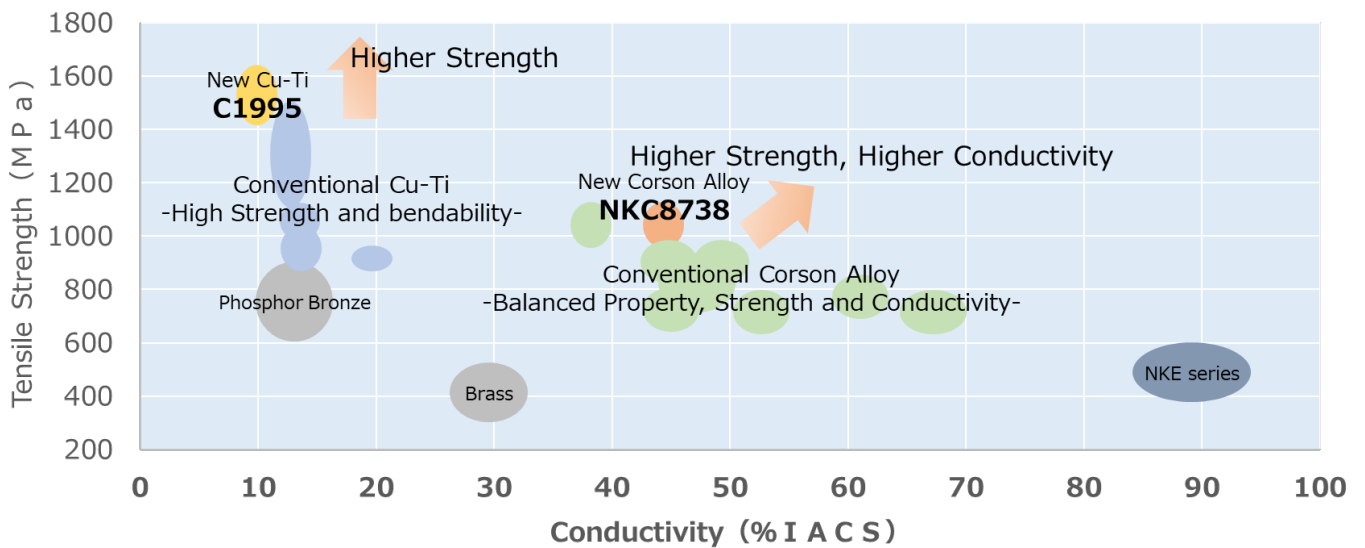


Figure 2: Comparison of Thermal Resistance Properties of Copper Foils for Lithium-Ion Batteries

