Copper Materials for High-frequency & High-speed Transmission

JX Nippon Mining & Metals Corporation

Copper Foil for Fine Pitch & High Frequency Performance “BHM Treatment”

Application Examples

Printed Circuit Board

Smartphone

Display

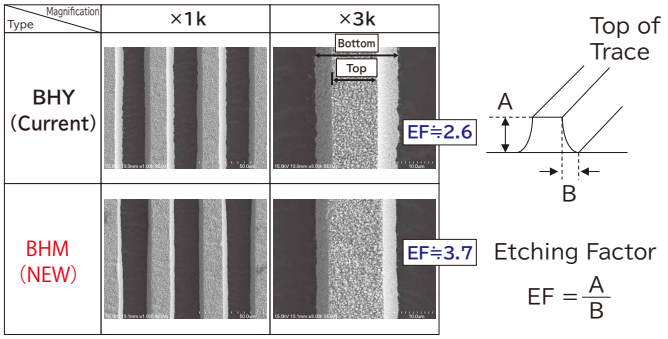
Millimeter-wave Radar

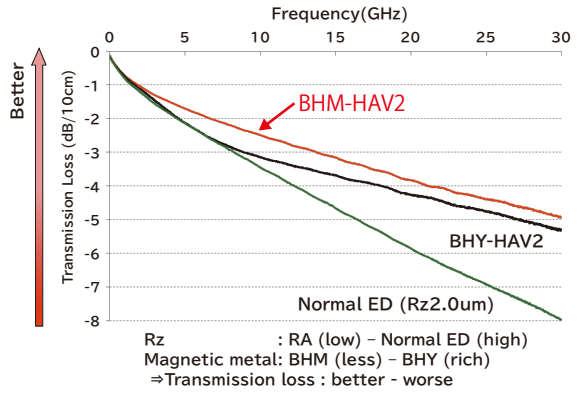
Automobile

Merits for Customers

- BHM exhibits high frequency & fine pitch (under L/S=25/25μm) as well as good FPC reliability. BHM can be applied with JX’s rolled copper foil(HA, HA-V2) and electro-deposited copper foil (JXEFL).

Image of L/S=20/20μm Pitch Circuits



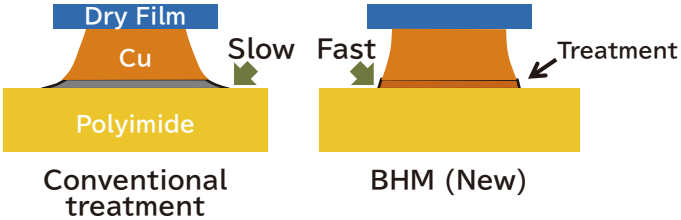


Rz : RA (low) – Normal ED (high)
Magnetic metal: BHM (less) – BHY (rich)
⇒Transmission loss : better - worse

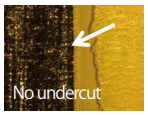
Features of BHM

- BHM is a treatment which can be etched faster and achieve a high etching factor (EF).
- BHM achieves high-frequency performance by lessening the amount of magnetic metals. At the same time, BHM maintains good FPC reliability.

Mechanism of High Etching Factor (EF)



FPC reliability test of BHM treatment

Evaluation subject	BHY-HA-V2	BHM-HA-V2
Peel Strength	1.3N/mm	1.3N/mm
Solder blister test After 85℃ 85%RH for 48hr, Dipping 290℃ for 60sec	 No blister	 No blister
Undercut test SPS 50 g/L 15min dip	 No undercut	 No undercut

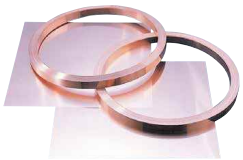
High-Electrical Conductivity Copper Alloy - Corson Alloy -

Application Examples


Battery Terminal


USB Type-C


Smartphone


Copper Alloy

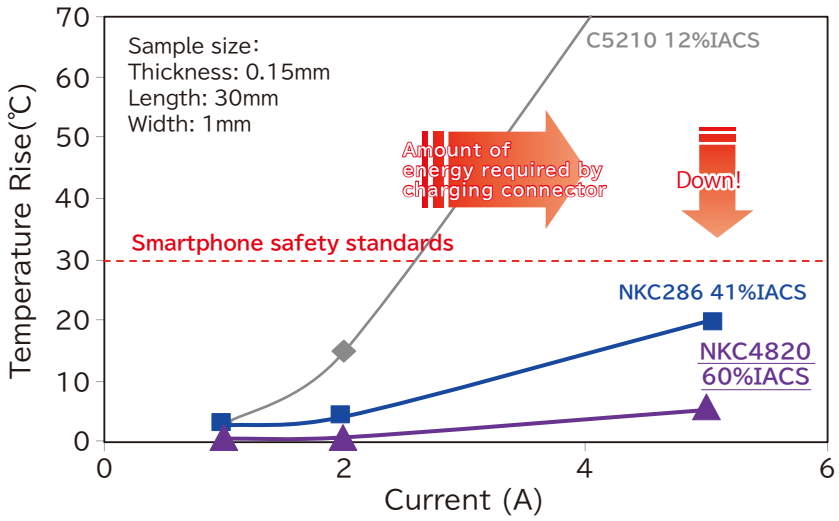

Automobile


Floating Connector


FPC Connector

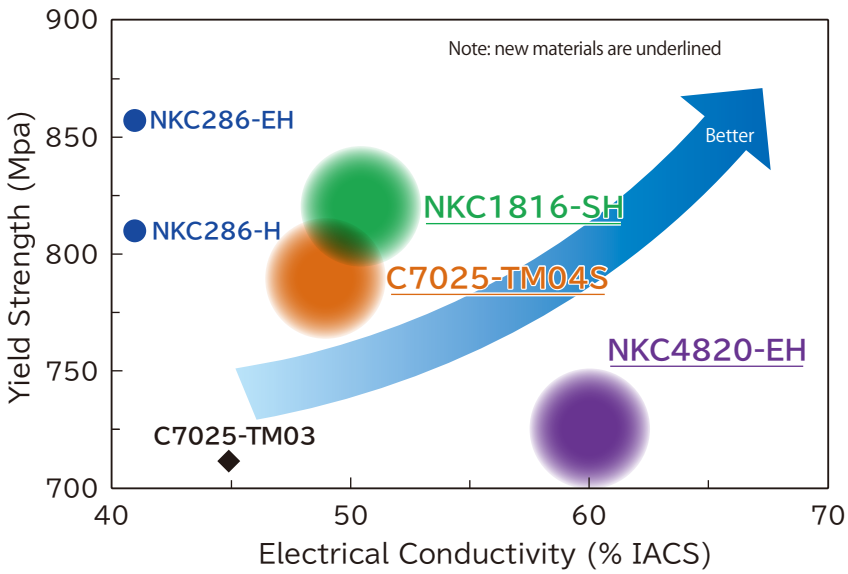
Merits for Customers

- Connectors supplying large volumes of electricity suppress heat generation and improve energizing efficiency.
- Since high-conductivity Corson alloys increase the volume of electricity supplied, they can be used in areas where conventional Corson alloys cannot, such as rapid charging and next-generation USB4 connectors.
- Despite being highly conductive, they maintain the same levels of strength, bendability, and heat resistance as conventional Corson alloys.



Features of High-Electrical Conductivity Corson Alloy

- High-conductivity Corson alloy maintains strength and boasts high conductivity compared to conventional C7025, C7035 and NKC286.
- We have a track record of manufacturing micro-connector-compatible plates as thin as 60μm.
- NKC1816-SH and C7025-TM04S have improved conductivity with C7035-level strength. NKC4820-EH maintains the strength of C7025 and greatly improves conductivity.



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