Copper Alloy Strip Stripe-Plated with Precious Metal

1. INTRODUCTION

A mechanically strong copper alloy with a corrosion-resistant precious metal (e.g. gold, silver, and palladium) plating is preferably used for electronic contacts and connectors. The combination of base copper alloy and precious metal plating is important for the reliability of electric connections.

We have started to produce and sell precious metal plated strips with a gold and/or palladium strip plated on high-performance copper alloy strips (phosphor bronze, brass, EFTEC series, etc.).

2. FEATURES

We carry out integrated production starting from base copper-alloy materials thereby enabling:

1) Recommendation regarding suitable combination of base copper alloy and precious metal plating (e.g. gold and palladium stripe plating on silver plated copper alloy or bare copper alloy)
2) Guaranteed quality from base material to plating
3) Fine plating and base surfaces

We use special stripe-plating equipment without expensive tape-masking to achieve accurate stripe at lower cost.

3. PRODUCIBLE LIMIT

Table 1 shows the range we can produce. Figure 1 shows selected product examples.

4. STRIPE PLATING ACCURACY

Figure 2 shows stripe plating accuracy of a 200-m long stripe with 4.2-mm wide gold plating.

Plating location achieved using the special stripe plating equipment is the most precise excluding the tape masking method. (about ±0.2 mm)

Table 1 Producible range of precious metal stripe plating.

Item		Producible range	Remarks
Base material		Cu and Cu alloy	• Ag plated strip is available • Flat punched strip is available
Thickness		0.05~0.64 mm	
Width		10~65 mm	
Plating	Underplating	Nickel (bright, matt), whole	
	Finishing	Hard Gold (Au-Co), Palladium	
Thickness of plating	Underplating	0.1~2.0 μm	
	Finishing	0.01~2.0 μm	
Face side of plating	Underplating	Both sides	
	Au Finishing	One side or both sides	
	Pd Finishing	One side or both sides	• Whole flash Pd plating is needed
Width of stripe		0.5~8.0 mm	• Location accuracy: ±0.25 mm
Number of stripes		As many as needed	• 2.5 mm space is needed between the stripes • Edge plating is available only on one face side
Location of stripes		Anywhere as far as edge	
Variety of stripe thicknesses		Two thicknesses	

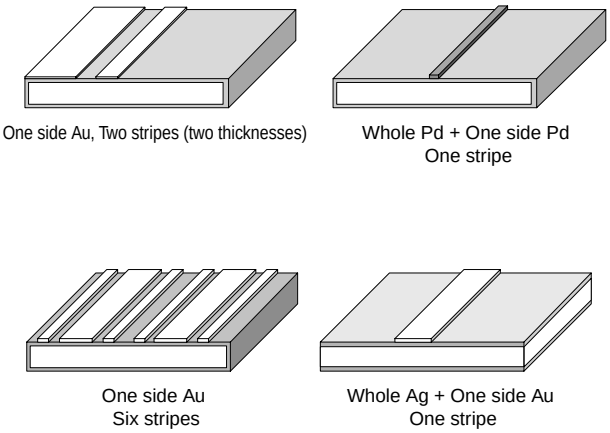

Figure 1 Product examples.

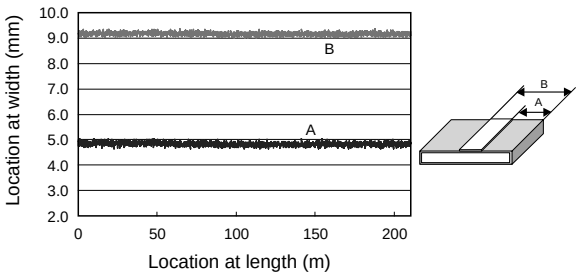

Figure 2 Locational accuracy of stripe.

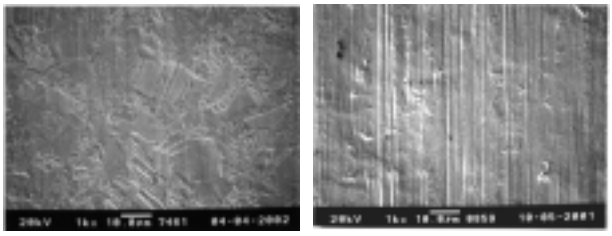

Figure 3 SEM image of plated surface.

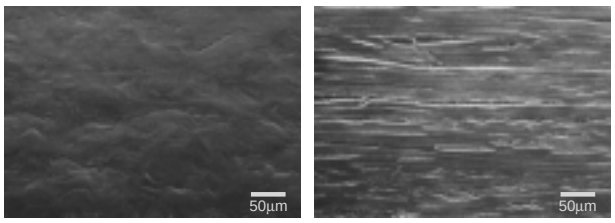

Figure 4 SEM image of W-bent plated material.

5. SURFACE

Gold stripe plating on a nickel undercoated C2680R strip was observed with a scanning electron microscope (SEM), and compared to a general method.

Figure 3 shows images of the surface. Our material shows the microstructure of the base material, which has no deformed layer. On the other hand, the general material shows buff scratches on the surface.

6. BENDABILITY

Figure 4 shows SEM images of the 0.4-mmR W-bent surfaces of the same materials as those above. Our product has no cracks, while general products currently available have surface cracks.

7. PURPOSES

Suitable for switches, connectors, and brush contacts.

8. CONCLUSION

We can propose and supply the ideal plated copper materials for your needs through an integrated manufacturing process based on accumulated techniques.

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