



MIRALLOY® For Costume Jewellery



Zn

Sn

Cu

Copper-tin-(zinc) electrolytes as nickel-free alternatives

Your advantages:

- + Copper-tin-(zinc) alloy coatings of white or yellow colour
- + Diamagnetic
- + Nickel-free (EC Nickel Directive 94/27/EC)
- + Resistant to tarnishing and corrosion
- + Excellent thickness distribution
- + Can be lacquered
- + Can be combined with precious metals
- + Tried and tested process not causing allergies as known of nickel

Since 1981, MIRALLOY® has been a good alternative for the nickel-free coating of costume jewellery. Particularly endangered skin zones are the earlobes because of ear-piercing, neck and arms (costume jewellery and wrist watches).

MIRALLOY® is an alkaline-cyanide electrolyte for depositing copper-tin or copper-tin-zinc coatings in both barrel and rack operation. Depending on the type of electrolyte used, either white or yellow layers can be deposited. White coatings contain about 55 % copper, 30 % tin and 15 % zinc. Yellow coatings have average alloy percentages of 80 % copper, 17.5 % tin and 2.5% zinc; 80 % copper and 20 % tin, or 85 % copper, 10 % tin and 5 % zinc.

MIRALLOY® coatings are characterized by a very good metal distribution and, depending on the type of electrolyte used, high tarnish resistance, levelling, abrasion resistance and excellent corrosion resistance.

Subsequent plating with gold, rhodium or other precious metals is unproblematic if suitable processes and pre-treatment steps are chosen, this will provide optimum corrosion protection.



Ring coated with
MIRALLOY® and AURUNA®.

Applications

- Costume jewellery
- Ear studs / earrings
- Necklaces
- Bangles
- Wrist watches

Technical specifications MIRALLOY® 846 S

Electrolyte characteristics MIRALLOY® 846 S

Electrolyte type	Alkaline-cyanide
Metal content	16.5 g/l Cu 10.0 g/l Sn 2.5 g/l Zn
pH value	Alkaline
Operating temperature	50 °C
Current density range	1.5 A/dm ²
Plating speed	Approx. 0.35 µm/ min at 1.5 A/dm ²
Anode material	MMO (type PLATINODE® 167, graphite)

Coating characteristics MIRALLOY® 846 S

Coating	Copper-tin-zinc
Alloy composition	70 - 80 wt. % Cu 13 - 19 wt. % Sn 5 - 8 wt. % Zn 0.5 - 1 wt. % Pb
Colour of deposit	Yellow
Brightness	Bright
Hardness of deposit	400 HV
HV 0.1 (Vickers) approx. values	
Max. coating thickness	20 µm
Density of the coating	8.4 g/cm ³

MIRALLOY® copper-tin-(zinc) electrolytes for the costume jewellery industry:

- MIRALLOY® 846 S (yellow) for rack operation
- MIRALLOY® 2840 (white) for rack operation
- MIRALLOY® 2841 (white) for rack and barrel operation
- MIRALLOY® 2844 (white) for barrel and rack operation
- MIRALLOY® 2847 (yellow) for barrel operation
- MIRALLOY® 2850 (white) for rack and barrel operation

In Europe 15 to 20 per cent of all women and about five per cent of all men are allergic to nickel. For this reason, the legislators translated the European Nickel Directive into national law with the 7th amendment of the Consumer Goods Ordinance (14 June 2000).

European Nickel Directive (Directive 94/27/EC, 30 June 1994)

- Earrings and comparable objects remaining in a wound during the healing process may not contain more than 0.5 % by weight of nickel.
- Objects intended to come into direct and prolonged contact with the skin (e. g. earrings, chains, rings, watches, buttons etc.) must not be used if the rate of nickel release from those parts of these products coming into prolonged contact with the skin is greater than 0.5 µg/cm²/week.
- If a non-nickel coating is used, it must be guaranteed that the rate of nickel release from those parts coming into direct and prolonged contact with the skin will not exceed 0.5 µg/cm²/week for a period of two years of normal use of the product.

