

Techni Silver[®] Cyless[®] 915 HS

Cyanide-free Silver for Electronics



Safer High-speed Cyanide-free Silver

Techni Silver[®] Cyless[®] 915-HS is a cyanide-free, mildly alkaline semi-bright silver solution for Electronics applications, particularly suited for medium and high-speed reel-to-reel plating.

Extensive testing has shown that Techni Silver[®] Cyless[®] 915-HS allows parts to be processed at a comparable plating rate to cyanide-based silver processes. Samples plated with this product also showed similar contact resistance vs cyanide-based plated samples.

Techni Silver[®] Cyless[®] 915-HS provides a number of advantages for plating shops and, most importantly, it drastically reduces the risks for the environment and human health.

Techni Silver[®] Cyless[®] 915-HS is a valid alternative for electronics manufacturers looking to improve sustainability and safety of their operations, without compromising on performance.

Benefits

- Easier waste treatment
- Effective operating costs
- Good corrosion resistance
- Plating rate comparable to cyanide-based processes
- No need for cyanide destruct system
- Excellent contact resistance and anti-tarnish performance
- No need to modify existing plating equipment to switch from conventional to cyless
- Negates the necessity for extensive precautionary safety containment emergency systems
- Eliminates requirements for expensive cyanide handling licensing and insurance

Features

- Free of all cyanide compounds
- Low foaming
- Outstanding deposit quality
- Deposit is not sensitive to fingerprints
- Supplied as a ready-to-use solution for ease of make-up
- Ideal for medium speed reel-to-reel
- Suitable for other applications requiring moderately high current densities
- Capable of reel-to-reel plating on a wide operating range (from low to high current density)



Techni Silver® Cyless® 915 HS

Current Density Range

Evaluated by Rotating Cathode Electrode @ 1000 RPM.
Current density (ASF and ASD) and deposition rate ($\mu\text{m}/\text{min}$) values are shown below the image.



50 ASF 75 ASF 100 ASF 125 ASF 150 ASF
5 ASD 7.5 ASD 10 ASD 12.5 ASD 15 ASD
2.9 $\mu\text{m}/\text{min}$ 4.4 $\mu\text{m}/\text{min}$ 6 $\mu\text{m}/\text{min}$ *7.5 $\mu\text{m}/\text{min}$ *9 $\mu\text{m}/\text{min}$

*Deposition rates >6 $\mu\text{m}/\text{min}$ require rigorous agitation

Parameter	Range
Silver Metal	45 – 55 g/l
Techni Silver® Cyless® 915 Conductivity Liquid	250 – 350 ml/l
Techni Silver® Cyless® 915 Complexor	50 – 70 g/l
Techni Silver® Cyless® 915 Brightener	15 – 40 ml/l
Temperature	46 – 60°C (115 – 140°F)
pH	10 – 10.5
Current Density	5 – 10 ASD (50 – 100 ASF)
Agitation	Vigorous
Anodes	Bagged silver slab or nuggets in baskets
Deposition Rate	4 $\mu\text{m}/\text{min}$ @ 6 ASD (160 $\mu\text{m}^2/\text{min}$ @ 60 ASF)

What our customers say:

“Perfect silver deposit. Very uniform and easier to maintain.”

“I wish we could have switched years ago. Our cyanide safety and treatment regulation costs were through the roof.”

“Techni Silver Cyless 915 HS is unmatched among the tested cyanide-free silver processes.”

Contact Resistance Testing

- Contact resistance was evaluated per industry standard ASTM B667-97 / ASTM B539-02
- Output: resistance vs. normal force using Au-plated probe with 300g load normal force
- Contact resistance equipment



Silver deposits after steam aging and without anti-tarnish.

(Left)
Cyanide silver

(Right)
Cyless silver 915

Sample	Contact Resistance (m-ohms)		
	As plated	4 hrs. Steam age	8 hrs. Steam age
CN-Silver plated busbar	1.1847	2.9070	7.827
CN-free Silver plated busbar	0.9120	2.5751	7.388
CN-free Silver sample + KSII anti-tarn	0.9629	1.5383	5.016



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