

Silvertech C

Silver Carbon process



Electronics

Functional electronic coatings

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Silvertech C – Silver Carbon for reduced wear off

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Moving silver contacts are suffering from constant wear off. Over time, this can lead to a loss of conductivity. Silvertech C is developed to reduce wear off by co-depositing carbon. The deposits exhibit a significantly higher wear resistance than pure silver.

We offer silver carbon with different carbon sizes that are for use in high-voltage switches and battery chargers.

Properties

- Matt appearance
- Applicable CD: 0.5 – 1.5 ASD
- Low temperature process: 15 – 25 °C
- Vicker's hardness: 60 – 90 HV25
- Wear resistance: > 20.000 mating cycles
- Low co-efficient of friction: 0.2 – 0.5
- Cyanide-based electrolyte for rack and barrel applications

Silvertech C – a Silver Carbon process

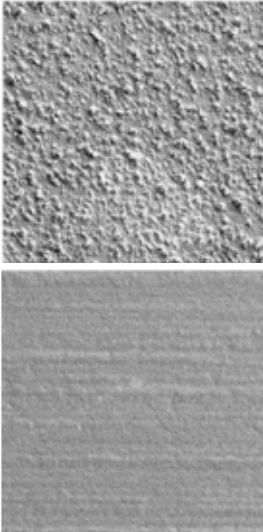


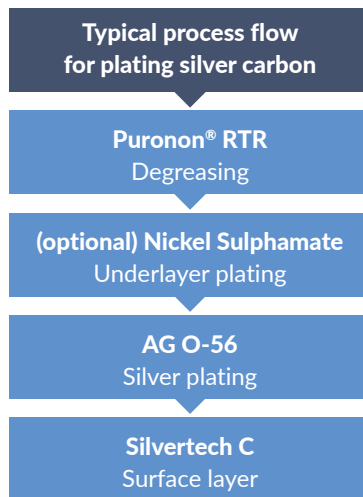
Figure 1+2:
SEM pictures for Ag-C
(1) without brightener
(2) with brightener

Deposit and process properties

The composition reduces the coefficient of friction and exhibits higher stability for arching. Therefore, the deposits show excellent wear resistance with more than double the mating cycles than pure plated silver.

Silvertech C is available in two different types of carbon grain sizes. The process is designed for rack and barrel tools. At 1 ASD a deposition rate of 0.62 $\mu\text{m}/\text{min}$ is achieved. Current densities of 0.5 – 1.5 are also applicable making the process flexible and easy to handle.

With the use of a brightener, the surface can be smoothed and controlled. It also can reduce the amount of incorporated carbon (Figure 1+2).



Process flow

Silvertech C is a cyanide-based electrolyte plating process. The deposits show co-deposition of 1 – 2 % carbon and produce a highly electrically conductive matt surface. A typical process flow for silver carbon plating on connectors contains electrolytic degreasing using Puricon RTR to ensure optimal preparation for the following plating processes. In standard connector plating, a usual 2 μm nickel layer is plated using nickel sulphamate processes. To allow greater adhesion of the silver carbon surface layer, a pure silver layer of 1 – 2 μm is plated on top. Silvertech C is plated as a final finish.

