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COOL-AMP #1233-500 PRODUCT INFORMATION SHEET

COOL-AMP is an odorless, water soluble, white powder used to apply a protective coating of Silver metal on copper or low-alloy brass and bronze substrates. The process is *electroless* and deposits an adherent coating typically 40 – 70 micro-inches in thickness by rubbing the moistened powder onto the cleaned part. There is no significant variation in thickness with the number of applications. It is an *electrochemical* process in which the very surface of the copper is displaced as the silver deposits.

Benefits of COOL-AMP Silver coating

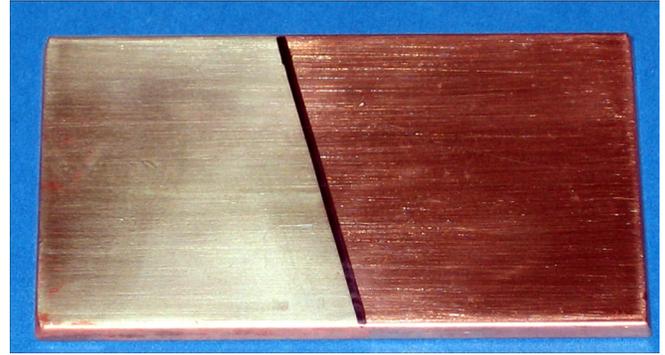
Applying a Silver coating provides a protective barrier to inhibit corrosion of the base copper. Copper oxidizes in air, creating a high resistance oxide film over the surface of the conductor. Silver brings an additional benefit: It has the lowest resistivity of all metals at room temperature. Silver is very resistant to oxidation in air so exposure to oxygen does not degrade electrical performance. By maintaining a stable resistivity over time, the silver coating significantly increases the useful life and efficiency of the connection.

<u>Material</u>	<u>Resistivity, 10⁻⁸ Ohm•m</u>
Silver	1.629
Copper	1.725
Gold	2.271
Aluminum	2.733
Zinc	6.06
Tin	11.5

Thermal conductivity of silver is 4.29 W/m-K.

Increases in *contact resistance* caused by oxide or other corrosion films on electrical contacts are well known. Tests exposing Silver and Copper contacts to N₂-O₂-SO₂-S₈-H₂O have shown Silver contacts to have superior performance.

Coated samples heat treated for two hours at 150 °C in air have shown the Silver-to-Copper bond passes ASTM B 571 in 45° modified Bend Test.



Procedures for applying COOL-AMP

Good bonding of the silver coating requires the metal substrate be completely free of any corrosion or oily films. Parts should be cleaned by wet-sanding with a fine-grit paper and distilled water and then rinsed with fresh distilled water.

In cases of oily residues, strong detergents, e.g., those for automatic dish washers, may be required, prior to wet-sanding the surfaces. Heavy build-up of solid films may be removed with stainless steel, fine-wire brushes.

The cleaned part is now ready to be Silver coated. Use a wet/moist soft cloth to rub portions of the dry COOL-AMP onto the part, until a continuous, bright Silver surface has formed. Rinse the Silver with distilled water to remove all of the powder. After drying, the part is ready for service.

One pound of COOL-AMP will Silver coat 6000 in² or ~42 ft² of substrate.

Guidelines for using COOL-AMP

Recommended for use on parts made of copper or low-alloy brasses and bronzes. Use on moving parts will result in wear by friction or scratching.

COOL-AMP Registrations: NSN #6850-00-561-0349, NAIC CODE #325998 and SIC CODE #2899.